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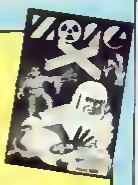
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Atari ST Road Show is coming

THERE are currently more than 1,000 software developers writing programs for Atari ST machines, 400 of them UK-based.

And to keep dealers up to date with this software explosion an Atari ST Road Show is touring the country during the spring.

Presentations at venues in Birmingham, Bristol, Manchester, Leeds and Edinburgh will demonstrate what the 520ST and 1040ST can do for the small to medium sized business.

Leading software houses have been invited to talk about their products, from simple book-keeping programs to CAD/CAM packages, the VT100 terminal emulator and Prestel software.

Dealers will hear a presentation about Atari itself, the marketplace in general, and how best to boost sales of the ST machines.

A 15,000 CROWD BOOST FOR ATARI

THE first Atari Computer Show proved a spectacular success, attracting 5,000 more people than had been expected. In all close to 15,000 people converged on the three day event held at the Novotel, Hammersmith.

Now observers are claiming that this mass demonstration of popular support for the Atari range has effectively re-established the computer company as a market leader in the UK.

So impressed were the party of Atari VIPs who had flown over from California to attend the show that they immediately announced their intention to hold similar events in both Germany and the United States.

This was not only the first Atari Computer Show in the UK, it was the first in the world. Atari's president Sam Tramiel summed up the reaction in one word. Fantastic.

He told *Atari User*. We couldn't be more pleased. You people over here have really shown us a thing or two. The organisation has been superb, the standard of exhibitors first class and as for the visitors, if those are Atari users here in the UK then we are certainly on the right track.

I can only thank everyone on behalf of Atari. Naturally when you take over a sick company as we did you are bound to be a bit concerned over what the future has in store, but after this show we realise our efforts have all been worthwhile.

The 70 exhibitors were equally enthusiastic about the success of the show. And no wonder considering that sales over the three days amounted to more than £1 million.

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NEW BENEFITS FOR 8 BIT ENTHUSIASTS

THE resurgence of Atari as a force in the computer industry has led to unexpected benefits for 8 bit enthusiasts.

In a major about face the company is revitalising its approach to the low end of its product line which has had to take a back seat to the ST machines since the great Atari revival began a year ago.

A new word processing package has been built around the 130XE to take on the Amstrad PCW8256 in the small business and serious hobbyist arena.

And there are plans to double the memory capacity of the sole surviving Atari 8 bit micro and launch a 256k version.

All this has come about in response to demand from a section of the market that Atari bosses were convinced was declining.

The survival and growing strength of the 8 bit user base has surprised and delighted company executives.

They had relegated the low end micros to a secondary role in the remodelled marketing strategy designed around the ST generation of Atari computers.

Production of the 800XL was discontinued and remaining stocks offloaded at bargain prices through Dixons and Curry outlets over Christmas.

At the time Atari promised continued support for the 130XE as its sole ongoing machine in the 8 bit market.

Now the company has gone even further encouraged by demand from consumers and support from third party suppliers.

The 130XE Super Word Processing Pack comprises a micro 1050 disc drive 1027 letter quality printer AtariWriter Plus and three more pieces of software.

At £349 it undercuts the Amstrad PCW8256 by an impressive £100 and is sure to cause a stir among Alan Sugar's high flyers in Brentwood.

Atari vice president Sig Hartmann explained the reason behind his firm's new emphasis on the 8 bit market during an interview with *Atari User*.

"We intend to revitalise this section of the market" he said. "We have come to realise that there is definitely a need for machines to serve consumers at the so called low end of the market.

"I have to admit that we have been surprised by the continuing strength of the 8 bit market. It is healthier than ever and we intend to get our share of the action.

As well as bringing out the 130XE word processing pack we will be producing a 256k version of the XE and it should be on sale within the next few months.

£1 million sales at Show

From Page 7

first day despite thinking they had sufficient supplies for the full three days – 10 exhibitors actually sold out by 2pm just four hours after the show had opened.

Typical of these was Comsumart whose stand was offering Atari 8 bit computers and peripherals so you couldn't have found a happier man around than the company's managing director Steve Burke.

"It was just incredible – we ended up selling out completely three times" he said. "The first time was half way through the first day when we had taken easily enough to last a normal show. But we still sold out and had to get more.

"By Saturday afternoon we were in the same situation again so once again we had to restock and by Sunday morning the lot had gone and we just couldn't get any more. It means tens of thousands of pounds worth of business for us.

"So we immediately rebooked a stand for the next show not even knowing when it is going to be.

The last word must go to a typical Atari user Peter Dobbins 18 travelled down from Carlisle to attend the show.

"And that's a little bit further than West Ham" he pointed out "but I'd have travelled from the Antarctic by dog sled to go to this show."

It was great. Lots of new things and plenty of bargains. I got back what I'd paid out for my rail fare in the savings on my first purchase alone.

Nothing but nothing is going to keep me away from the next

WHAT THE EXHIBITORS SAID...

"It was a very good show. We felt the strength of it was the contacts made both in the UK and with overseas people. Our business software brought in orders and promises of more than £100,000 and most of it has already been shipped.

It was an ideal venue and overseas visitors told me they were impressed with the ease of travel from Heathrow to the Hotel with its Under ground link-up."

– Haba Systems managing director Mike Dale

"We really had a super three days. We launched Blue Ribbon and sold out the games by the second day. We just could not get enough to meet demand. It was one of the best shows we have been to and we are certainly going to the next one."

– CDS Software sales manager Martyn Wilson

"A super show really like the old days. Our sales covered the cost of the stand in two days and we were pleased with the profit."

– Llamasoft director Hazel Minter

"The show was excellent. Congratulations to Database. We can't wait for them to organise another. It was 100 per cent above what we expected the sales were just thousands of pounds when we were only expecting hundreds."

– Software Express managing director Jerry Howells

"We made excellent contacts with foreign and European visitors. Sales were very good. It was an impressive show nicely put together."

– Microdeal press officer Jenny Pope

"I was pleased there was a split for the games and business sectors. This kept away the noise of the games and the general males there rather than distracting the business side which produced good sales."

– Essaon director Vernon Hovsepian

"It was above expectations. Our software games sales were excellent. We sold out certain games and had to send out for more stock. We were happy with the whole show and with the interest shown by Atari owners which has encouraged us to produce more software for them."

– Tynesoft sales manager Trevor Scott

The five year pitch

JACK Tramiel has given himself and Atari five years in which to grab 20 per cent of the world's micro market – or suffer dire consequences.

The colourful Atari chairman told influential US financial paper Investors Daily that sales of ST machines in North America and Europe prove his target is attainable.

But he warned: If you don't reach 20 per cent of this computer market in five years you're out. You won't get the support from software houses and you won't get the right prices from your suppliers because you won't be able to buy in sufficient volume.

However Tramiel was confident the 20 per cent figure was within his reach although I don't have the exact timing – it's all a matter of market conditions.



Billy Ocean

Atari is a star's star turn

THE Atari 1040ST has proved a star attraction for chart-topping Billy Ocean. His manager Laurie Jay bought the computer to organise plans for a six month world tour which starts in June.

Said Laurie: "The Atari has done everything for us. It has worked out our flight arrangements, listed our hotels and all our venue details.

But the most useful is that we have been able to draw the stage plans and print them out in colour so they can be forwarded in advance to the venues for preparation.

It is the first time we have used this computer to arrange things and we are still learning what it can do. We are now two months ahead of schedule and I cannot believe the amount of work it has saved us."

The compact disc ROM has not been shelved

DESPITE rumours to the contrary, compact disc ROM players still feature prominently in Atari's plans for the future.

Reports that the company has shelved the project indefinitely have been strongly denied by sales and marketing manager Rob Harding.

He told *Atari User*: "Nothing could be further from the truth – Atari will definitely launch a CD ROM player although the event won't take place for several months.

"There are two reasons for the delay, and both involve factors beyond Atari's control.

Firstly the ROM player is an extremely software-dependent piece of equipment, and there is a worldwide shortage of CD software capacity.

"Secondly CD mechanism prices are currently too high for us to turn out a product for the mass market that would meet Jack Tramiel's criterion of power without the price.

"And you have to remember we aim to bring out a machine with audio as well as data-reactive capabilities, along with other sophisticated features, all of which add considerably to Atari's costs.

"While the CD ROM player is not a viable mass market product for us at the moment, the situation is improving.

Our partner Warner Communications is setting up a plant to manufacture compact discs and this should be operational later this year.

"Also we expect the present high cost of CD mechanisms to come down sharply in the next six to nine months and create the conditions we need to go ahead with the project."

COMPILER SPEECH PROGRAMS

STAND by for a host of new high quality programs for the Atari ST range.

A flurry of activity in software houses has been sparked by the launch by specialist programming language compiler Prospero Software of Pro Fortran-77 for the ST.

The new compiler opens the door to 68000 architecture for professional programmers and developers and is likely to prompt a new generation of Atari ST software.

Pro Fortran-77 will also enable developers to recompile existing mini and mainframe software to run on ST machines.

Atari has enthusiastically welcomed the Prospero initiative. Sales and marketing boss Robert Harding told *Atari User*: "This is an important milestone in the development of the market for the ST.

"We believe it will generate a wave of high quality software allowing users to fully exploit the machines potential.

Fortran 77 is one of the most widely used high level programming languages among engineers, scientists and academics – and the most popular medium for micro professionals writing their own programs.

Prospero marketing manager Andrew Lucas said: "We recognised the possibilities offered by the Atari ST and other 68000 machines at a very early stage.

"Our compilers will allow micro professionals to unlock the vast library of existing technical software such as state-of-the-art CAD/CAM for instance and make it available to Atari users.

"With the power and sophistication of such a machine costing less than £1,000 there are now tremendous opportunities for developers."

Pro Fortran 77 for the Atari ST costs £129.

Crime in the past

A CRIME adventure out for Atari ST users has a small-time private detective as the hunter – and the hunted.

Activision's Borrowed Time, set in the 1930s, entails tracing 20 suspects who want the hero dead and avoiding being shot, beaten-up or imprisoned, demands fast reflexes.

Hugh Rees Parnell, managing director of Activision, said: "Only the movements of the private eye are controlled, the other bad guys' actions are sudden and unexpected making the pace frantic."

Price, on disc, is £14.99.

Lunar sequel

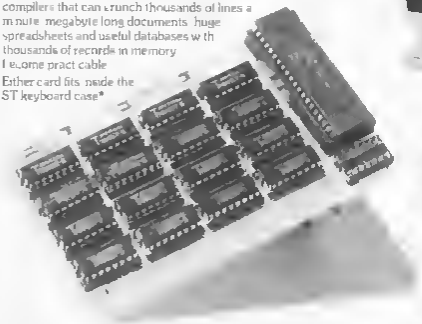
A SEQUEL to last year's chart topping adventure Red Moon has been released by Level 9 Computing to run on Atari 800XL and 130XE machines.

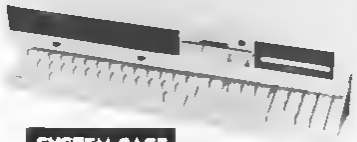
Price of Magik has more spells and independent creatures to control than Red Moon.

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The System case will improve your viewing angle and leave your desk uncluttered.

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As the president of Atari, Sam Tramiel – the eldest of Jack's three sons – is in charge of the day-to-day running of the world wide organisation. It is he, second only to his charismatic father, whose decisions will eventually make or break Atari. Here he talks to MIKE COWLEY about his life and the events which have influenced his current thinking.

Sam Tramiel, taking the international r



TO all outward appearances Sam Tramiel comes across as super capitalist Rich relatively young – he's still only 36 – he wears the mantle of wealth easily as befits the hair to a dynasty which one day may well be compared to the Rothschilds

Yet it hasn't always been like that An Italian friend brought vivid memories flooding back when he recently recalled the saying If you aren't a communist by the time you are 18 you haven't got a heart But if you aren't a capitalist by the time you are 25 you have no brains

For that's almost exactly what happened to the eldest son of the man who built Commodore into a billion dollar empire then turned his back on it to give Atari the kiss of life

It was 1968 and Sam Tramiel had just finished his first year at university Like so many of his contemporaries he was disenchanted with what was happening in the United States in general and in Vietnam in particular

Soon he began associating with other radical thinkers on the fringe of an extreme left wing front organisation known as the Students for a Democratic Society Quite naturally his father who even then was viewed as the epitomy of the capitalist objected

"My father was very straight with me" recalls Sam He called me in and said 'You cannot have a Jaguar E type credit cards and be a communist

"I said yes I can He replied 'No you can't The Jaguar is out The credit cards are going

"Fine I said 'Thank you very much I don't need any of that and I took no more money

So Sam Tramiel turned his back on his wealthy father and went to work to put himself through university He headed for Canada where schooling was cheaper and took to wearing a hard hat during his vacations while acting as a surveyor on construction sites

My father and I still loved each other he remembers but there was a very basic philosophical difference between us And he could not imagine supporting that philosophy financially – as was his right

Yet Sam was to undergo a dramatic change in the next couple of years Having to support myself and

By MIKE COWLEY

put myself through school I began to realise what money was all about , he says so it wasn't long before I started to shift my ideologies In fact by the time I finished school I was quite a capitalist

Not that the mere fact of being without money itself was the prime reason for the transformation After all Sam Tramiel had hardly been born with a silver spoon in his mouth

Back in 1950 when Sam dropped in on the world home was a cramped apartment in the tough tenement district of Lower East Side in Manhattan New York And the rent of $15 a month took a huge slice out of the money his father was then earning as a cab driver, having survived the horrors of Auschwitz to emigrate to the States

By the time he was three young Sam had moved with his family to the New York district of Queens where his father, now a typewriter repair man, had acquired a house The truth of the matter was the house wasn't really much bigger than the apartment we had says Sam

And once again they were living in a predominantly immigrant area where the Jews kept to themselves as did the Poles the Irish and the blacks

So Sam could speak only Yiddish until he was five years old and left the shelter of what was little more than a ghetto to venture to kindergarten

"Pledging allegiance to the flag of the United States was my first English lesson he recalls It wasn't to be too long before he found himself doubting the wisdom of it all

At the age of five Sam was transported to Toronto which his father judged would be an easier place to compete in than the United States

By this time Jack Tramiel had set himself up as a dealer in typewriter and adding machines importing stock from Europe Little did he realise then but he was laying the foundations of an empire

The stay in Toronto lasted five years during which time Sam developed a passion for outdoor sports Then it was back to New York but by this time the Tramiel family

route to success

business had flourished sufficiently to warrant an up-market address in Long Island

"The Commodore company had been started by then" says Sam "We were fully fledged importers of adding machines from Berlin and typewriters from Czechoslovakia And it wasn't long before my father was able to buy the factory making the adding machines in Germany

"Inevitably with both his father and mother actively involved in the family firm Sam can only recall one topic ever being discussed around the dining table – business

"It was always the same" he says "so much was it part of my life that I was playing the stock markets when I was in my early teens

Describing himself as "an OK student but not brilliant" Sam Tramiel is best remembered at college as an all round athlete A champion wrestler he made both the college football team and the record breaking 880 yard relay squad

After his brief flirtation with the Karl Marx contingent Sam Tramiel returned to the fold Clutching his newly-awarded economics degree he threw in his lot with his father at Commodore "As a family we had always had the idea of working together" he says "The Rothschilds had always impressed me and I'd always thought that one day I'd like to see us like they were years ago"

Yet because he was the boss's son he was given no privileges Starting at the bottom in the warehouse he worked his way up through the departments "I was always underpaid compared to the other employees" he remembers

Two years after joining Commodore in California he was transferred to the company's London offices By this time he was married to his high school sweetheart from Toronto

Tragically after giving birth to their child his wife came down with cancer and died some three years later Accompanied by his baby daughter Sam returned to California for a few months before accepting a posting to Hong Kong

He had been out there for a year when he remarried his second wife being a schoolteacher from Toronto

By this time Commodore was booming with sales of close to $600 million and growing in leaps and bounds

However like many other sons of successful fathers Sam Tramiel began to be torn with self doubt "Could I do it on my own" I began to ask myself" he says "Would it have all been possible if I'd not been Jack's son in the Commodore framework?

So my father and I had a long talk and it resulted in my leaving Commodore and setting up on my own in Hong Kong"

Within two years Sam Tramiel had proved his point He controlled four companies with the help of Chinese partners making watches telephones computer peripherals and games "We were typical Hong Kong OEM suppliers", he says

It was the illness of a friend which led him back to Commodore The man in question had been running the Hong Kong operation for the company when failing health forced him to take early retirement

Who then could Commodore turn to to fill the gap in Hong Kong the corporation's key manufacturing centre? Sam Tramiel was persuaded to help out for 12 months

It was a crazy time" he recollects "Every week I received phone calls saying 'Make more C64's' 'Make more C64s' The market simply couldn't get enough"

And in the meantime his wife gave birth to their "Chinese Jewish Canadian" son At the end of the year's contract Sam Tramiel was convinced that his future lay with his father in Commodore

So he kept control of the Far East situation but moved to Japan to get a better understanding of the key component market there He remained in Tokyo for nine months until the news broke that his father had left Commodore following a bitter dispute with the chairman

That was in January 1984 Sam flew back to California the following month and told Commodore he would be happy to stay on if required

Five months later he too resigned after becoming frustrated through a seeming inability of the Commodore management to make decisions following his father's departure

While working his month's notice Sam Tramiel had lengthy discussions with his father over what they would do in the future "By this time my father had accumulated a vast amount of wealth" he revealed "So we were faced with a number of alternatives

"Should we become merchant bankers?

"Should we just take it easy?

"Should we go back into the computer business? What should we do?"

By the time he left Commodore the opportunity to buy Atari had arisen With a number of outstanding design experts – including his own brother Leonard who had just gained a degree in astrophysics from the university of Columbia the Tramiel clan began to think seriously about computers again

"Our people went to talk to Warner Communications and to cut a long story short ended up buying Atari" says Sam Tramiel "We had expected to find a sick company but what we really found was a complete shambles"

It is Sam Tramiel's conviction to this day that Atari will only become a world force if it remains internationally minded "We see this as the key" he says

"When we designed the ST we emphasised the international aspect so we had a German keyboard a French keyboard an Italian keyboard a UK keyboard right from the word go – not coming along later TOS was designed in four languages

The man coordinating this global approach by Atari is Sam Tramiel himself "I see myself as an international citizen" he insists In fact the Atari president holds a Canadian rather than an American passport

"The reason for this is I feel much more like a Canadian who are more open in their views than the Americans who tend to be inward looking and chauvenistic

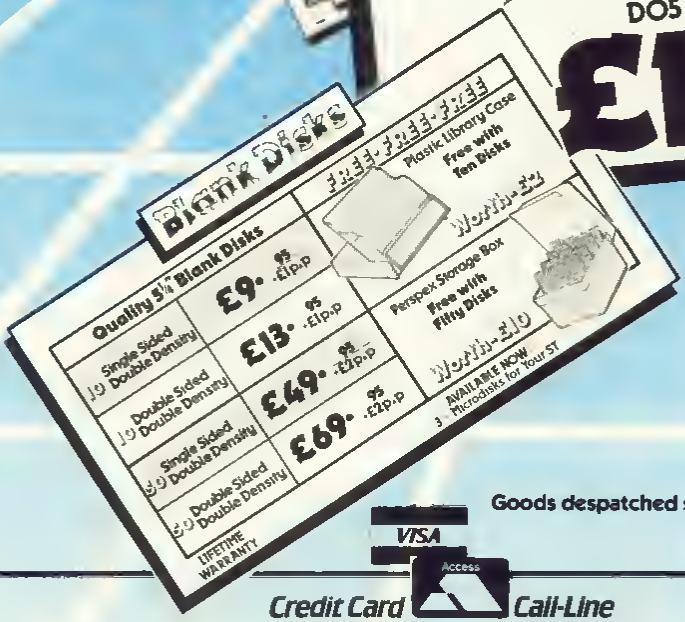
And perhaps there's just that little bit of radical left in me after all

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IN-I-GO JOE, the world famous archaeologist and explorer, triumphs again, finding the long lost treasure of King Munesbage in the labyrinths below the king's recently discovered tombs.

It only remains now for Joe to escape But it s easier said than done For the caverns in which he is now lost are full of perils

The king's ghost wanders there seeking revenge assisted by a mindless zombie The slightest touch by these will mean instant disintegration

Treacherous sulphur pits wait to catch the unwary The caves themselves are old and crumbly and it is easy to find yourself cut off in a dead end where the ghost will soon find you

If this was not enough the designers of the local underground have encroached on the caverns and you are in constant danger of being run over by the B 15 to the city centre

Your escape is also blocked by five doors and you must find the keys hidden somewhere in the caves before you can pass them Joe himself has lost his knife and trusty whip and ran clean out of bullets some time ago His only weapons now are his wits and agility

So you ll need plenty of luck as you guide Joe to freedom

Playing the game is straightforward When run for the first time the screen will go black for 90 seconds but after this will start immediately You may also see a vertical coloured stripe but Don t Panic

Joe is controlled by joystick I and he will move instantly in the direction commanded The caves consist of a maze of 100 rooms and must be completed in the correct sequence

I advise you to draw a map as you go along If you hit a wall it will knock you into the centre of the room – and possible danger – and may daze you

Picking up a key is performed by touching it If you then touch the corresponding door it will open and stay open The wrong key and you will be knocked back

Occasionally the king s curse will result in your developing a shadow Watch for this and if it occurs you must run over it to make it disappear

If you are killed you will be reincarnated but you only get three lives

The program itself fits tightly into 48k It uses a complicated vertical blank interrupt to move the players a redefined character set and Antic Mode 4 (Graphics 12 on XL/XEs) It will however work on all Ataris with sufficient memory

The lengthy initialisation is because of the large amount of data for the machine code routines, VBI character set and players

The maze is held in the data statements from line 2000 to 2099 The first four letters hold the exits the next number is the type of cave the next the information line and the last number is the degree of difficulty for that room This is only relevant in type 3 and 4 rooms

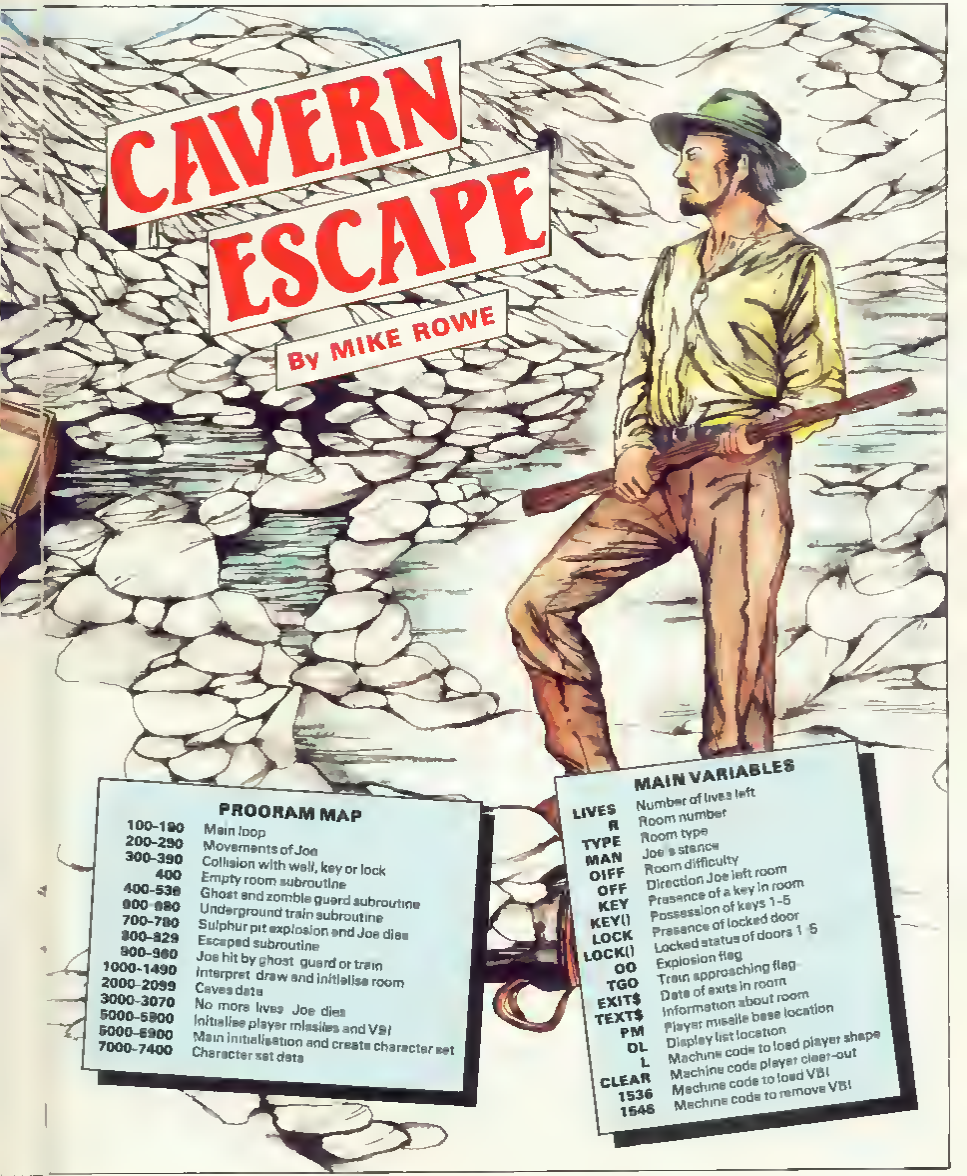
The difficulty of the game can be altered by changing these – the higher the number the more difficult up to a maximum of 255

By altering these lines you create a different maze without needing to rewrite the whole program

I ll be providing an editing program in a future issue This will enable you to redesign Cavern Escape at will

CAVERN ESCAPE

By MIKE ROWE



PROGRAM MAP

100-190	Main loop
200-290	Movements of Joe
300-390	Collision with wall, key or lock
400	Empty room subroutine
400-530	Ghost and zombie guard subroutine
900-980	Underground train subroutine
700-780	Sulphur pit explosion and Joe dies
800-829	Escaped subroutine
900-960	Joe hit by ghost guard or train
1000-1490	Interpret draw and initialise room
2000-2099	Caves data
3000-3070	No more lives Joe dies
5000-5900	Initialise player missiles and VBI
5000-5900	Main initialisation and create character set
7000-7400	Character set data

MAIN VARIABLES

LIVES	Number of lives left
R	Room number
TYPE	Room type
MAN	Joe's stance
OIFF	Room difficulty
OFF	Direction Joe left room
KEY	Presence of a key in room
KEY()	Possession of keys 1-5
LOCK	Presence of locked door
LOCK()	Locked status of doors 1-5
OO	Explosion flag
TGO	Train approaching flag
EXIT$	Data of exits in room
TEXT$	Information about room
PM	Player missile base location
DL	Display list location
L	Machine code to load player shape
CLEAR	Machine code player clear-out
1536	Machine code to load VBI
1545	Machine code to remove VBI

```
10 REM CAVERN FIGHTER Mark 1 TB
20 GOSUB 6000
40 GOSUB 1900
100 REM MAIN LOOP
110 IF PEEK(1536)<20 THEN OFF=-10:GOSUB 1600
120 IF PEEK(1540)>100 THEN OFF=10:GOSUB 1600
130 IF PEEK(ZERO)<>0 THEN OFF=-1:GOSUB 1600
140 IF PEEK(53662)>200 THEN OFF=21:GOSUB 1600
150 IF PEEK(632)=3 THEN GOSUB 700
160 IF PEEK(53248)<>0 THEN 600
170 S=STRIG(0):IF S=1 OR S=14 THEN 100
180 GOSUB 1000:GOTO 100
190 REM MOVE ENEMIES
200 MAN=MAN+1:IF MAN=5 THEN MAN=1
210 ON ST GOTO 220,240,260
220 IF S=15 THEN A=USR(L,0,PM*1403):GOTO 230
222 SOUND 0,0,W,2,10:ON MAN GOTO 224,226,228,224,228
224 A=USR(L,0,PM*1402):RETURN
226 A=USR(L,0,PM*1202:RETURN
230 A=USR(L,0,PM*1803:RETURN
240 IF S=15 THEN A=USR(L,0,PM:RETURN
242 SOUND 0,100,2,10:ON MAN GOTO 244,246,248,244,248
244 A=USR(L,0,PM*903:RETURN
246 A=USR(L,0,PM*702:RETURN
248 A=USR(L,0,PM*603):RETURN
250 IF S=15 THEN A=USR(L,0,PM*602:RETURN
252 SOUND 0,100,2,10:ON MAN GOTO 254,256,258,254,258
254 A=USR(L,0,PM*903:RETURN
256 A=USR(L,0,PM*803:RETURN
258 A=USR(L,0,PM*1003:RETURN
260 RETURN
299 REM ANIMATE MONSTERS
300 COL=PEEK(53252):ON COL GOTO 320,330,330,330,320,320
310 SOUND 3,6,10,15:A=USR(L+401):A=USR(L+600,0
315 POKE 1536,128:POKE 1540,128:A=USR(L,0,PM:A=USR(L+1501):POKE 53270,0:SOUND 2,0,0,9:RETURN
320 IF RND(L+0)=0 THEN POKE 1556,192:POKE 53270,0:RETURN
330 SOUND 3,100,2,15:POSITION 17,9:? "  ":FOR I=1 TO 20:NEXT I
331 POSITION 17,10:? "  ":FOR I=1 TO 20:NEXT I
332 POSITION 17,11:? "  ":FOR I=1 TO 20:NEXT I:SOUND 3,0,0,0
335 L=L+(L<1)*2:POKE 53270,0:RETURN
350 RETURN
399 IF KEY()0 THEN KEY=(KEY)=1:POSITION 17,9:? "R";:POSITION 17,10:? "  "
305 FOR I=100 TO 20 STEP -2 SOUND 3,I,10,10:NEXT I:SOUND 3,0,0,0
390 POKE 53270,0:RETURN
399 REM ERASE
400 FOR I=1 TO 6 NEXT I POKE 77,0:RETURN
```

```
499 REM STORE
500 I=INT(RND(0)*40)
520 A=(56*(PEEK(1536)*2)-PEEK(1536))*4+56*(PEEK(1536)*2)-PEEK(1536))*2+5
521 GOTO A
524 POKE 1536+I,5:RETURN
525 POKE 1536+I,13:RETURN
529 POKE 1536+I,9:RETURN
529 POKE 1536+I,7:RETURN
530 RETURN
531 POKE 1536+I,11:RETURN
534 POKE 1536+I,0:RETURN
535 POKE 1536+I,14:RETURN
536 POKE 1536+I,10:RETURN
599 REM KNOW
600 IF RND(0)<.800 PEEK(53278)):DIFF THEN FOR I=1 TO 4:NEXT I:RETURN
605 IF TRIG=0 THEN TRIG=1:DIR=0:IF RND(0)<.5 THEN DIR=40
610 SOUND 1,60,0,TRIG/3 TRIG=TRIG+1 IF TRIG<20 THEN RETURN
620 TRIG=25:GOTO 610+DIR
```

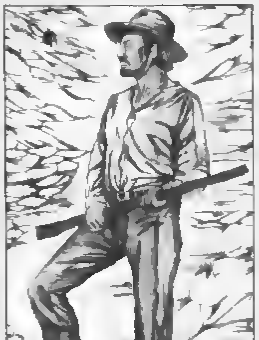


```
630 IF TRIG>27 THEN POKE 1536,7
631 TRIG=TRIG-1:IF PEEK(1568)<200 THEN RETURN
635 SOUND 1,0,0,0 POKE 1540,0:POKE 1560,25:TRIG=0 RETURN
670 IF TRIG>27 THEN SOUND 1536,13:POKE 705,20
672 TRIG=TRIG-1:IF PEEK(1560)<200 THEN RETURN
675 SOUND 1,0,0,0 POKE 1561,2 POKE 1565,15:TRIG=0:POKE 705,0
680 A=USR(1536):A=USR(CLEAR,1) A USR(L,1,PM*1202 A=USR(1536):RETURN
699 REM SCORE
700 IF GO=0 AND PEEK(53278)=255 THEN FOR I=1 TO 4:NEXT Z:RETURN
705 GO=GO+1
710 ON GO GOTO 720,730,740,750,760,770,780
720 SOUND X,256,0,60*2 EX=USR(ADR(X$*8+EX+256*(D+1)*256+A
725 POKE 1567,EX POKE 1561,EY RETURN
730 SOUND X,285,0,60*2 A=USR(L,I,PM*201:RETURN
740 SOUND X,290,0,60*2 A=USR(L,I,PM*204):RETURN
750 SOUND 5,256,0,60*2 A=USR(L,I,PM*1374:RETURN
760 SOUND X,256,0,60*2:A=USR(L,I,PM*2
07 RETURN
770 SOUND X,256 A=60*2:POKE 1567,EX-4:POKE 53266+I,I+A:USR(L,I,PM*100):RETURN
780 SOUND I,0,0,0 A=USR(CLEAR-1) POKE 53266+I A=0:RETURN
799 REM ADDRESS
800 FOR I=1 TO 41:PEEK(53279)(?) NEXT I:RUN
810 NEXT I
820 RETURN
899 REM COLLISION WITH JOYSTICK
900 A=USR(1540) GO=2
910 T=0 EX=4
920 FOR I=1 TO 5:EX=EX+1 SOUND 700 NEXT I POKE 53286,0
930 FOR I=0 TO 2 SOUND X,0,0 0 NEXT I
950 LIVES=LIVES-1:IF LIVES=0 THEN 1000
960 A=0:OFF=0 GOSUB 1000 GOTO 100
999 REM TRAM ROOMS
1000 IF PEEK(53252)<>0 THEN GOTO 150
1010 A=USR(CLEAR-82:A=USR(CLEAR-11:A=USR(CLEAR-21:A=USR(CLEAR,1):POKE 559,0
1020 IF OFF=10 THEN POKE 1560,100
1021 IF OFF=10 THEN POKE 1580,10
1022 IF OFF=-1 THEN POKE 1066 100
1023 IF OFF=1 THEN POKE 1550,50
1040 FOR I=0 TO 2 SOUND I,0,0,0 NEXT I
1050 A=OFF:POKE 203,0
1060 REM EXITS TYPE ITEMS,DIFF
1065 KEY=0:LOCK=0:POKE 53257,0
1070 ? CHR$(125)
1080 ON TYPE GOSUB 1100,1200,1300 1100,2400
1085 POSITION 0,21:? "  TYPE ";TYPE:POSITION 0,22:? "  ITEMS
1090 FOR I=1 TO 5:POSITION 3*I,22 ? CHR$(52+6*(DAT(I)-1));:NEXT I
1030 POKE 559,62:A=USR(1536):A=USR(L,0 PM:POKE 53278,2 RETURN
1200 POSITION 2,0:? "zyzzyaayyzyyzyzzyz yzzyyyzyzyzzyzyzzyzyzyy"
1110 ? "yfefghezgfehgfezbgfefgbefgfefgbeyhez"
1120 ? "zA     yA
      99"
1125 ? "zA   ",,,"   rz"
1122 ? "yp   ",,,"   tz"
1123 ? "yA   ",,,"   yy"
1124 ? "zB   ",,,"   ry"
1125 ? "yA   ",,,"   sy"
1126 ? "  ",,,"   ry"
1127 ? "zB   ",,,"   tz"
1128 ? "zB   ",,,"   tz"
1129 ? "zB   ",,,"   tz"
1130 ? "  ",,,"   qy"
1131 ? "zp   ",,,"   rz"
1132 ? "yA   ",,,"   qz"
1133 ? "zB   ",,,"   sz"
1134 ? "zB   ",,,"   sz"
1135 ? "zB   ",,,"   sy"
1136 ? "yA                    ed
      ry"
1140 POSITION 1,23:? "abdbrdddcbddcdd2bc6adddrdczybcdabdqddy"
1150 ? "zyzqdzyzyzzzzyzzyyzyzqzyzyzyzqzyzyzyzy"
1160 IF TYPE=1 THEN SETCOLOR 2,3,4:SETCOLOR 4,0,0:RETURN
1170 IF TYPE=2 THEN SETCOLOR 2,3,4:SETCOLOR 4,0,0:RETURN
1180 IF TYPE=3 THEN SETCOLOR 2,3,4:SETCOLOR 4,0,0:RETURN
1199 REM ITEMS
1200 IF ITEMS=1 THEN POKE 1536,7
1210 IF ITEMS=2 THEN POKE 1540,7
1220 IF ITEMS=3 THEN POKE 1544,7
1230 IF ITEMS=4 THEN POKE 1548,7
1240 IF ITEMS=5 THEN POKE 1552,7
1250 RETURN
1299 REM DIFFICULTY
1300 IF DIFF=1 THEN POKE 1536,7
1310 IF DIFF=2 THEN POKE 1540,7
1320 IF DIFF=3 THEN POKE 1544,7
1330 IF DIFF=4 THEN POKE 1548,7
1340 IF DIFF=5 THEN POKE 1552,7
1350 RETURN
1399 REM KEYS
1400 IF KEY=1 THEN POKE 1536,7
1410 IF KEY=2 THEN POKE 1540,7
1420 IF KEY=3 THEN POKE 1544,7
1430 IF KEY=4 THEN POKE 1548,7
1440 IF KEY=5 THEN POKE 1552,7
1450 RETURN
1499 REM LOCKS
1500 IF LOCK=1 THEN POKE 1536,7
1510 IF LOCK=2 THEN POKE 1540,7
1520 IF LOCK=3 THEN POKE 1544,7
1530 IF LOCK=4 THEN POKE 1548,7
1540 IF LOCK=5 THEN POKE 1552,7
1550 RETURN
1599 REM DOORS
1600 IF DOOR=1 THEN POKE 1536,7
1610 IF DOOR=2 THEN POKE 1540,7
1620 IF DOOR=3 THEN POKE 1544,7
1630 IF DOOR=4 THEN POKE 1548,7
1640 IF DOOR=5 THEN POKE 1552,7
1650 RETURN
1699 REM CHESTS
1700 IF CHEST=1 THEN POKE 1536,7
1710 IF CHEST=2 THEN POKE 1540,7
1720 IF CHEST=3 THEN POKE 1544,7
1730 IF CHEST=4 THEN POKE 1548,7
1740 IF CHEST=5 THEN POKE 1552,7
1750 RETURN
1799 REM TRAPS
1800 IF TRAP=1 THEN POKE 1536,7
1810 IF TRAP=2 THEN POKE 1540,7
1820 IF TRAP=3 THEN POKE 1544,7
1830 IF TRAP=4 THEN POKE 1548,7
1840 IF TRAP=5 THEN POKE 1552,7
1850 RETURN
1899 REM SCREEN
1900 GRAPHICS 2+16:POKE 752,1:POKE 559,0:POKE 710,0:POKE 709,0
1910 POKE 712,0:POKE 708,0:POKE 707,0:POKE 706,0:POKE 705,0
1920 POKE 704,0:POKE 703,0:POKE 702,0:POKE 701,0:POKE 700,0
1930 POKE 699,0:POKE 698,0:POKE 697,0:POKE 696,0:POKE 695,0
1940 POKE 694,0:POKE 693,0:POKE 692,0:POKE 691,0:POKE 690,0
1950 POKE 689,0:POKE 688,0:POKE 687,0:POKE 686,0:POKE 685,0
1960 POKE 684,0:POKE 683,0:POKE 682,0:POKE 681,0:POKE 680,0
1970 POKE 679,0:POKE 678,0:POKE 677,0:POKE 676,0:POKE 675,0
1980 POKE 674,0:POKE 673,0:POKE 672,0:POKE 671,0:POKE 670,0
1990 POKE 669,0:POKE 668,0:POKE 667,0:POKE 666,0:POKE 665,0
2000 POKE 664,0:POKE 663,0:POKE 662,0:POKE 661,0:POKE 660,0
2010 POKE 659,0:POKE 658,0:POKE 657,0:POKE 656,0:POKE 655,0
2020 POKE 654,0:POKE 653,0:POKE 652,0:POKE 651,0:POKE 650,0
2030 POKE 649,0:POKE 648,0:POKE 647,0:POKE 646,0:POKE 645,0
2040 POKE 644,0:POKE 643,0:POKE 642,0:POKE 641,0:POKE 640,0
2050 POKE 639,0:POKE 638,0:POKE 637,0:POKE 636,0:POKE 635,0
2060 POKE 634,0:POKE 633,0:POKE 632,0:POKE 631,0:POKE 630,0
2070 POKE 629,0:POKE 628,0:POKE 627,0:POKE 626,0:POKE 625,0
2080 POKE 624,0:POKE 623,0:POKE 622,0:POKE 621,0:POKE 620,0
2090 POKE 619,0:POKE 618,0:POKE 617,0:POKE 616,0:POKE 615,0
2100 POKE 614,0:POKE 613,0:POKE 612,0:POKE 611,0:POKE 610,0
2110 POKE 609,0:POKE 608,0:POKE 607,0:POKE 606,0:POKE 605,0
2120 POKE 604,0:POKE 603,0:POKE 602,0:POKE 601,0:POKE 600,0
2130 POKE 599,0:POKE 598,0:POKE 597,0:POKE 596,0:POKE 595,0
2140 POKE 594,0:POKE 593,0:POKE 592,0:POKE 591,0:POKE 590,0
2150 POKE 589,0:POKE 588,0:POKE 587,0:POKE 586,0:POKE 585,0
2160 POKE 584,0:POKE 583,0:POKE 582,0:POKE 581,0:POKE 580,0
2170 POKE 579,0:POKE 578,0:POKE 577,0:POKE 576,0:POKE 575,0
2180 POKE 574,0:POKE 573,0:POKE 572,0:POKE 571,0:POKE 570,0
2190 POKE 569,0:POKE 568,0:POKE 567,0:POKE 566,0:POKE 565,0
2200 POKE 564,0:POKE 563,0:POKE 562,0:POKE 561,0:POKE 560,0
2210 RETURN
2399 REM TYPE 2
2400 POKE 1536,7:POKE 1540,7:POKE 1544,7:POKE 1548,7:POKE 1552,7
2410 RETURN
5999 REM LOAD
6000 GRAPHICS 0:POKE 752,1:POKE 559,0:POKE 710,0:POKE 709,0
6010 POKE 712,0:POKE 708,0:POKE 707,0:POKE 706,0:POKE 705,0
6020 POKE 704,0:POKE 703,0:POKE 702,0:POKE 701,0:POKE 700,0
6030 POKE 699,0:POKE 698,0:POKE 697,0:POKE 696,0:POKE 695,0
6040 POKE 694,0:POKE 693,0:POKE 692,0:POKE 691,0:POKE 690,0
6050 POKE 689,0:POKE 688,0:POKE 687,0:POKE 686,0:POKE 685,0
6060 POKE 684,0:POKE 683,0:POKE 682,0:POKE 681,0:POKE 680,0
6070 POKE 679,0:POKE 678,0:POKE 677,0:POKE 676,0:POKE 675,0
6080 POKE 674,0:POKE 673,0:POKE 672,0:POKE 671,0:POKE 670,0
6090 POKE 669,0:POKE 668,0:POKE 667,0:POKE 666,0:POKE 665,0
6100 POKE 664,0:POKE 663,0:POKE 662,0:POKE 661,0:POKE 660,0
6110 POKE 659,0:POKE 658,0:POKE 657,0:POKE 656,0:POKE 655,0
6120 POKE 654,0:POKE 653,0:POKE 652,0:POKE 651,0:POKE 650,0
6130 POKE 649,0:POKE 648,0:POKE 647,0:POKE 646,0:POKE 645,0
6140 POKE 644,0:POKE 643,0:POKE 642,0:POKE 641,0:POKE 640,0
6150 POKE 639,0:POKE 638,0:POKE 637,0:POKE 636,0:POKE 635,0
6160 POKE 634,0:POKE 633,0:POKE 632,0:POKE 631,0:POKE 630,0
6170 POKE 629,0:POKE 628,0:POKE 627,0:POKE 626,0:POKE 625,0
6180 POKE 624,0:POKE 623,0:POKE 622,0:POKE 621,0:POKE 620,0
6190 POKE 619,0:POKE 618,0:POKE 617,0:POKE 616,0:POKE 615,0
6200 POKE 614,0:POKE 613,0:POKE 612,0:POKE 611,0:POKE 610,0
6210 POKE 609,0:POKE 608,0:POKE 607,0:POKE 606,0:POKE 605,0
6220 POKE 604,0:POKE 603,0:POKE 602,0:POKE 601,0:POKE 600,0
6230 POKE 599,0:POKE 598,0:POKE 597,0:POKE 596,0:POKE 595,0
6240 POKE 594,0:POKE 593,0:POKE 592,0:POKE 591,0:POKE 590,0
6250 POKE 589,0:POKE 588,0:POKE 587,0:POKE 586,0:POKE 585,0
6260 POKE 584,0:POKE 583,0:POKE 582,0:POKE 581,0:POKE 580,0
6270 POKE 579,0:POKE 578,0:POKE 577,0:POKE 576,0:POKE 575,0
6280 POKE 574,0:POKE 573,0:POKE 572,0:POKE 571,0:POKE 570,0
6290 POKE 569,0:POKE 568,0:POKE 567,0:POKE 566,0:POKE 565,0
6300 POKE 564,0:POKE 563,0:POKE 562,0:POKE 561,0:POKE 560,0
6310 RETURN
```

```
COLOR A,B,0:SETCOLOR 1,1,0:IF TEXT$="
" THEN TEXT$="EMPTY CODE"
1170 IF EXIST$(1 ,1)="M" THEN POSITION 1
9,0:? "   ":POSITION 16,1:? "   "
1171 IF EXIST$(2 ,2)="M" THEN POSITION 1
8,19:? "   ":POSITION 18 20:? "   "
1172 IF EXIST$(3 ,3)="M" THEN POSITION 1
,5:? "   ":POSITION 1,18:? "   ":POSITI
N 1,18:? "  "
1173 IF EXIST$(4,4)="M" THEN POSITION 2
7,5:? "   ":POSITION 37,18 ? "   ":POSIT
ION 37,11:? "  "
1180 IF R=36 THEN KEY=1
1181 IF R=22 THEN KEY=2
1182 IF R=91 THEN KEY=3
1183 IF R=34 THEN KEY=4
1184 IF R=9 THEN XRY=5
1185 IF A=22 THEN LOCK=1
1186 IF A=38 THEN LOCK=2
1187 IF A=36 THEN LOCK=3
1188 IF A=87 THEN LOCK=4
1189 IF A=85 THEN LOCK=5
1190 IF LHCH(L,SCR)=1 THEN POSITION 37,
9:? "   POSITION 37,10:? "   POSITIO
N 37,11 ? "   "
1191 IF KEY(KEY)=0 AND KEY()0 THEN POS
ITION 28,10:? "E"
1192 RETURN
1196 GOSUB 1186
1210 POKE 1057,80 POKE 1308,296:POKE 1
561,186 POKE 1562,96:POKE 200,10
1220 A=USR(1,1 PEEK(106) A-USR(1,2,PH+24
0)
1230 POKE 1577,1:POKE 1578,1
1235 SETCOLOR 1,12,0 SETCOLOR 0,0 0 SE
TCOLOR 2,9,4:IF TEXT$="" THEN TEXT$="S
WORDS"
1240 RETURN
1250 SETCOLOR 1 1,4:SETCOLOR 4,8,0 SET
COLOR 2 0 0:IF TEXT$ " " THEN TEXT$="S
WORDS FITS"
1260 GOSUB 1186
1270 POKE 1965,10:I=1 POKE 705,76
1290 RETURN
1299 REM  TRAITS CAVERN
1300 POKE 1559,0 POKE 1557,126 POKE 15
82,117 POKE 1581,1 A=USR(1,2,PH+1081):A
=USR(1 0 PEEK(106)
1305 POKE 1577,1 POKE 1578,2 POKE 1585
,0 POKE 1586,0 POKE 705,0
1310 DIM TRAITS(1,0
1320 FOR A=1 TO 9:? "                    
                    ":NEXT A
1330 POSITION 1 12
1340 FOR A=2 TO 9:? "                    
                    ":NEXT A
1345 I=1:J=2:GOSUB 1290:J=17 DATA 0,0 I
90,2:I=1:J=6:GOSUB 1290 I=12 GOSUB 1290
1360 I=12:J=17 GOSUB 1290 I=20 GOSUB 1
290
1370 SETCOLOR 1 2 0 SETCOLOR 4,0,0 IF
TEXT$=" " THEN TEXT$="SUNNEY"
1380 RETURN
1390 POSITION 1,3:? "   " POSITION 1,
J+1 ? "   " POSITION I,J+2 ? "   ":R
ETURN
1400 GOSUB 1186
1410 SETCOLOR 4,0,0 SETCOLOR 1,10,12 S
ETCOLOR 2,11,0:SETCOLOR 0 1,4
1420 FOR I=1 TO 20 POSITION RND(0)*38+
2,RND(0)*18+2:? "X";:NEXT I
1425 FOR I 1 TO 10:POSITION 20*(0)*2+
2,RND(0)*18+2 ? "(";:NEXT I
1430 RETURN
1999 REM  ROOM NAME DATA
2000 DATA N3WE,1,5,DOOR,0
2001 DATA N3WE,4, ,0
2005 DATA N5W8,1, ,0
2003 DATA N5W8,4, ,100
2004 DATA N5WE,1, ,5
2005 DATA N2WE,2, ,5
2006 DATA N2WE,2, ,5
2007 DATA N5WW,1, ,5
2008 DATA N5NE,0  50
2009 DATA KNNN,1,KEY NUMBER 5,0
2010 DATA D5NN,1, ,5
2011 DATA KXNE,4, ,100
2012 DATA B5NE,3, ,10
2013 DATA NKNE,1, ,5
2014 DATA NSWE,1, ,10
2015 DATA N4WE,3, ,0
2016 DATA N3NN,4, ,100
2017 DATA B5NN,1, ,0
2018 DATA NXNE,1, ,5
2019 DATA N5WW,1, ,5
2020 DATA D5NX,1,  5
2021 DATA KNNX,2 BEWS ENK! 5
2022 DATA NKNE 1 LOCKED DOOR 1,0
2023 DATA XNNN,1,KEY NUMBER 7,5
2024 DATA NKNE 2, ,5
2025 DATA XNNE 3, ,0
2026 DATA KEXX,7,DEAD END',0
2027 DATA N5XE 3, ,5
2028 DATA K3W8,4, ,100
2029 DATA N5XN,1, ,5
2030 DATA B5NE,2, ,0
2031 DATA N5NE,2, ,0
2032 DATA N5WW 1,  0
2033 DATA NNNX,2,BEWS ENK! 0
2034 DATA N5WE,2, ,5
2035 DATA N5NE,2, ,5
2036 DATA N5WE,4, ,50
2037 DATA N5WW 1, ,5
2038 DATA N5NE 1,LOCKED DOOR 1,0
2039 DATA BAWW 4, ,120
2040 DATA WXNN,2 ,5
2041 DATA N5WN,1, ,0
2042 DATA GXNE,1, ,0
2043 DATA N5WX,1, ,0
2044 DATA B5XX,4, ,10
2045 DATA B5N8,2, ,5
2046 DATA N5XN,2, ,0
2047 DATA NNXE,4, ,50
2048 DATA B5WE,3, ,10
2049 DATA N5W8,2, ,0
2050 DATA N5WE,1, ,5
2051 DATA N5WE,3, ,5
2052 DATA N3WE,1, ,5
2053 DATA N5WE 2, ,10
2054 DATA B5NN 4, ,0
2055 DATA NKNE,1, ,0
2056 DATA B5WE,2, ,0
2057 DATA B5N8,2, ,0
2058 DATA NNNE,2, ,0
2059 DATA NNNN,3, ,0
2060 DATA 25NX,1, ,0
2061 DATA NKNE,1, ,0
2062 DATA B5NE,2, ,0
2063 DATA NWNN 1, ,0
2064 DATA N5XN,2, ,0
2065 DATA N5NN,4, ,200
2066 DATA NNXE,4, ,200
2067 DATA NXNE 1,LOCKED D50N 4,5
2068 DATA N5WE,2  ,5
2069 DATA NWNN,2, ,5
2070 DATA N5WW,2, ,5
2071 DATA N5W8,2, ,0
2072 DATA D5XN 4, ,20
2073 DATA KWNE,4, ,100
2074 DATA N5WW,1, ,5
2075 DATA D5XE,2, ,5
2076 DATA NNNE,4, ,100
2077 DATA NNWE,2, ,0
2078 DATA B5WE,3, ,10
2079 DATA N3W8,4,  5
2080 DATA N5KE,1, ,5
2081 DATA WBN6,1, ,5
2082 DATA DNXE,1,LOCKED D0GR 1,5
2083 DATA K5NN,2, ,5
2084 DATA D5XN,4, ,10
2085 DATA B5NE,1,LOCKED DOOR 5,5
2086 DATA B5WN 2  ,5
2087 DATA KXNE,4, ,200
2088 DATA NWNE,1, ,0
2089 DATA KXNE 4, ,200
2090 DATA NNNX,1,KEY NUMBER 1,5
2091 DATA KXNE,1,KEY NUMBER 7,0
2092 DATA KENE,4, ,75
2093 DATA NENE,1, ,0
2094 DATA NENX,1,KEY NUMBER 4,5
2095 DATA XNNX,2,WEBG ENK!,5
2096 DATA NENE,2, ,5
2097 DATA NEIE,2, ,0
2098 DATA KENE,2, ,5
2099 DATA XNXX,5,ESCAPE',0
2100 DEM  MAN PROG
2110 A=USR(1546):FOR I=0 TO 255:SOUND
0,I 10,10:NEXT I:SOUND 0,0,0,0
2150 FOR I=0 TO 1:A=USR(CLEAR,1) NEXT
I
2636 POKE 82,27,0
2040 POSITION 0 21 ? "     E MAN 2000
       PRESS  START    "
2060 IF PEEK(53279)=7 THEN 2060
2070 RUN
5060 REM  PLAYER MISSILE DEFINITION
5010 A=32256:CLEAR-12210
5020 IF PEEK(12288)=72 THEN 5300
5030 RESTORE 5100
5040 FOR I=11A TO 1807 READ A:POKE I,
A NEXT I
5042 FOR I=12000 TO 12196:READ A:POKE
I,A:NEXT I
5044 FOR I=12256 TO 12319:READ A POKE
I,A NEXT I
5045 FOR I=12210 TO 12241:READ A POKE
I,A:NEXT I
5100 DATA 104,104,8,162,125,189,7,76,9
3,220,104,168,96,162,220,189,7,76,92,2
20
5110 DATA 195,195,170,170,195,87,81,15
5,15,15,15,0,0,0,0,83,83,84,85,1,1,
2,2,0,15,15,15,15,15,15,15
5105 DATA 73,120,72,152,72,162,0,189,1
96,2,73,48,0,169,35,82,176,12,201,10,2
40,26,201,14,208,7,168,12,76,1,12
5120 DATA 206,1,150,14,96,11,208,2,16
0 7,201,7,206,2,160,11,192,20,240,0,61
,48,5,157,20,0,152,81,46,0
5140 DATA 187,44 0,232 224,4,144,195,1
81,0,109,12,0,121,201,189 78,0,121,204
,189,40,0,133,209,170,189,15,7,232
5150 DATA 224,4,144,222,170,91,189,20,
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```
5,133 287,78,287,175,15,160,24,5,152,1
,240,19,200,1,200,177,285,240 0,184
5150 DATA 165,203,200,160,245,135,165,
203,223,24,6,79 207,178,29,160,24,5,10
0,191
5170 DATA 204,175,21,177,001,205,247,1
35,177,283,148,5,280,145,201,130,293,2
45 200,145
5180 DATA 207,284,24,5,78,167,175,1,22
2,25,5,75,167,175,1,254,29,5,189,15,5,
157,0,205,14,148,154
5190 DATA 100,152,104,175,100,75,98,12
5
5200 DATA 234,234,234 104 154 154,175,
189,32,5,173,100,169,35,5,173,167,160
133,213,184,123,212,189,16
5215 DATA 5,133,195,169,0,164 120,130,
178,145,195,200,216,148,198,205 234,23
5,114,162,5,161,212,240,11
5220 DATA 165,100 230,212,285,191,255,
176,11 205,241,169,5,145,100,200,145,1
00,234,234,76,234,234
5250 DATA 32,21,5,100,204,104,170,169,
32,5,133 104,169,30,5,173,167
5290 DATA 169,5,160,234,169,104,200,13
2,205 140,288,32,1,5,96
5300 POKE 760,154:POKE 705,10:POKE 706
,178 POKE 707,20
5315 A=PEEK(1585)-15:POKE 60279,A:POKE2
06
5320 FOR I=4 TO 7:POKE 1600+I,60: NEXT
 I
5335 FOR I=1560 TO 1571:POKE I,5:NEXT
I
5340 POKE 53277,3
5350 IF PEEK(PMG-24 THEN 5380
5500 FOR I=PM TO PM+319:READ A:POKE I,
A:NEXT I
5510 DATA 24,60,24,24,24,24,24,24,24,2
4,28,28,24,24,28,28,24,24,0,0
5520 DATA 24,60,24,29,24,15,24,60,93,5
5,24,24,24,60,102,134,131,129,0,5
5535 DATA 24,60,24,28,24,28,24,24,24,24,6
5,24,28,24,24,28,128,60,24,5,0
5535 DATA 24,60,24,58,24,0,24,24,24,24
,60,60,24,24,24,55,5,24,0,0
5600 DATA 24,60,24,55,24,5,24,24,24,60
,24,24,24,60,102,87,193,1,0,0
5650 DATA 24,69,24,60,24,5,24,24,24,29
,24,60,24,24,45,125,15,24,0,0
5670 DATA 24,60,24,24,24,24,24,69,60,52,2
5,28,15,24,24,24,25,15,15,0,0
5687 DATA 24,60,24,24,24,24,24,60,60,60,6
5,55,55,24,24,24,24,24,15,0,0
5920 DATA 24,60,24,24,24,24,24,60,60,55,5
5,55,60,24,24,24,5,0,0,0,0
6000 DATA 60,128,173,101,173,101,173,1
81,171,128,65,0,0,5,0,5,5,5,5,5
6015 DATA 60,126,60,190,190,239,247,25
9,247,239,247,095,120,56,120,55,5,5,5,
0
6050 DATA 24,60,120,20,259,259,231,30,
129,128,60,60,20,24,24,0,5,0,0,5
6524 DATA 65 55,102,60,55,24,24,299,15
9,172,181,173,52,44,55,0,5,5,5,5
6535 DATA 0,32,15,5,15,0,32,5,15,0,16,
4,32 72,15,60,15,0,0,0
6550 DATA 5,32,1,60,17,132,00,0,15,5,5
,5,5,5,5,5,5,5,5,5
6650 DATA 15,6,56,7,00,4,170,00,9,32,1
5,280,24,0,15,0,0,0,5,5,0
```

```
5200 A=USR(1535)
6000 REM MARK INITIAL EDITION
5560 R=0
6010 DIM TEXT$(25),ZWRITE$(5),KEY(5),LOW
E(5)
6020 FOR I=1 TO 5:KEY(I)=0:LOCK(I)=1:NE
XT I
5520 POKE 559,0
5100 GOTO 5000
5110 GOSUB 5:POKE 82,1 POKE 752,1
5120 DL=PEEK(560)+PEEK(561)*256
5130 POKE DL+2,64:FOR I=DL+4 TO DL+15:
POKE I,4 NEXT I
5145 POKE DL+24,7 POKE DL+17,6 POKE DL
+20,4
```



```
5166 LIVES=3:HO=0 TRO=0:R=0
5190 GOSUB 6000
5200 REM MENU/GAME'S PLAY
5202 IF PEEK(12385)=11 THEN 5260
5210 RESTORE 7000
5225 FOR I=0 TO 71 READ A POKE 1379+I
,A:NEXT I
5235 FOR I=128 TO 287 READ A POKE 1379
2+I,A:NEXT I
5245 FOR I=256 TO 671 READ A POKE 1379
2+I,A:NEXT I
5265 FOR I=776 TO 783:READ A POKE 1379
2+I,A:NEXT I
5255 POKE 756,111
5305 RETURN
7005 DATA 0,0,0,0,0,0,0,0,12,12,11,14,
14,0,48,48,0,0,0,0,0,0
7515 DATA 0,63,63,63,63,63,63,63,0,63,
63,63,63,63,63,32,160,136,154,32,15
,15,15
7520 DATA 28,15,28,15,54,50,55,54,0,0
0,0,0,135,51,15,0,0,0,0,0,48,51,152
```

```
7550 DATA 0,30,51,51,107,152,60,0,0,19
,12,12,24,24,24,0
7555 DATA 0,30,51,0,0,25,60,216,0,0,63,0
,25,12,107,60,0,0,0,12,63,102,127,12,0
7570 DATA 0,31,48,60,0,152 65,0,0,30,0
0,60,102,191 60,0,0,0,63,0,12,24,48 96,0
7585 DATA 0,30,51,30,51,191,60,0,0,28,
51,28,0,12,90,0
7120 DATA 0,11,30 60,100,115,102,0,0,0
1,54,60,109,102,124,0 0,35,61,45,90,16
2,00,0
7120 DATA 0,60,66,52,200,100,120,0,0,0
2,48,00,95,100,194,0,0,52,00,60,20,20,
20,0
7160 DATA 0,31,51,60,102,63,62,0,0,51,
51,51,100,102,102,0,0,63,12,28,24,24,1
28,0
7140 DATA 0,0,0,0,0,19,100,120,0,0,51,00
,60,100,100,102,0,0,24,48,48,95,102,12
6,0
7150 DATA 0,99,119,127,127,120,120,0,0
,51,59,89,115,115,151,0,0,30,51,62,100
,151,60,0
7155 DATA 0,62,91,60,124,66,20,0,0,30,
51,51,109,115,62,3,0,51,52,54,124,160,
102,0
7170 DATA 0,30,51,24,0,100,60,0,0,63,1
1,12,24,24,24,0,0,51,51,51,102,309,150
,0
7180 DATA 0,51,51,102,102,60,24,0,0,63
,51,107,117,115,102,0,0,51,51,10,00,10
2,102,0
7190 DATA 0,51,102,60,24,48,20,0,0,63,
0,12,66,76,124,0
7000 DATA 1,1,15,10,00,178,171,100,0,1
28,160,224,100,185,171,224
7130 DATA 1,1,15,11,42,105,176,124,0,1
28,128,100,200,225,176,224,178,176,125
,170,45,10,11,2
7245 DATA 176,224,172,200,100,129,125,
5,175,107,175,45,10,11,1,2,105,176,124
,151,178,220,125,0
7260 DATA 0,32,32,45,46,100,171,224,5,
5,5,44,42,107,216,176,176,224,178,204,
45,31,12,0
7255 DATA 100,174,114,100,48,32,32,0,1
25,115,224,160,160,222,164,178,174,224
,100,222,155,160,114,118
7270 DATA 100,222,100,260,160,222,160,
100,120,124,160,160,160,224,155,119,2,
10,2,11,42,00,171,100
7300 DATA 100,170,45,83,42 10,10,1,174
,175,00,42,11 15 45,178,1,11,10,42,45,
42,16,1
7100 DATA 5,160,200,100,0,120,110,115,
0,160,160,155,0,130,115,115,0,0,0,5,0,
10 15,10
7400 DATA 0,0,0,0,0,0,0,5,170,255,171,
175,105,175,224,170,175,171,160,170,17
0,224,174,175
```




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Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	10643	20	1948	40	1925
100	7871	110	7161	120	7132
130	7121	140	7008	150	5606
155	4360	160	9050	165	9739
170	5924	175	4127	185	2502
190	1680	200	8023	204	5796
210	5011	220	7054	222	7260
224	6913	226	4911	228	4915
230	6360	242	7859	244	4712
246	6159	248	4722	250	6012
252	7504	254	4901	256	6732
258	6509	290	1650	299	13156
300	9715	310	7660	315	15816
320	10145	334	16151	331	7409
332	9870	335	6501	350	1490
360	13129	365	10760	390	4012
399	6919	400	7040	499	4921
500	3051	520	11827	521	1780
524	6859	525	4140	528	4065
529	6847	530	1459	531	4130
534	6841	535	4152	536	4133
599	6228	600	11584	605	9270
610	9624	615	2380	630	4919
631	7560	635	5400	670	7240
671	7535	670	9717	800	12122
699	4925	700	11212	703	1222
710	6300	720	10290	735	5226
736	8270	740	8774	750	8275
760	8280	770	14290	780	10482
799	6937	800	7442	810	1245
820	1490	899	13825	900	3021
910	1501	920	9351	930	5978
950	8820	960	9612	999	7402
1000	5297	1010	12475	1015	5388
1021	4920	1021	5138	1022	4366
1050	5970	1050	4301	1060	5541
1065	4691	1070	1737	1080	6159
1085	19773	1090	10797	1095	18601
1100	17317	1110	11484	1120	5152
1121	7068	1122	1667	1123	3059
1124	3007	1120	3062	1126	3061
1127	3007	1128	3071	1129	1978

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1130	2062	1131	3070	1132	2061
1133	2059	1134	3009	1130	3060
1136	8097	1140	14808	1160	14221
1160	10150	1170	10513	1171	11570
1172	14316	1172	14702	1100	3300
1101	3369	1102	3277	1107	3350
1104	3229	1105	3664	1100	3001
1107	3053	1108	3702	1109	2705
1190	17036	1191	8503	1190	1450
1200	1929	1210	12217	1220	6194
1230	4154	1240	14747	1240	1450
1250	10073	1200	1919	1170	5120
1290	1690	1295	9877	1300	15020
1305	10211	1310	2346	1320	17228
1330	7949	1340	17270	1350	12905
1360	6512	1370	13619	1300	1450
1390	14041	1400	1929	1410	11501
1410	10272	1420	10012	1490	1450
1999	10050	2000	4126	2001	7070
2002	2946	2002	3190	2005	2062
2005	2000	2000	1005	1007	2044
2000	2955	2005	9368	2010	2920
2011	3110	2012	2923	2012	2044
2014	2925	2015	2005	2016	2101
2017	2920	2010	2000	2019	2000
2070	1920	2021	6522	2022	6149
2022	6293	2024	2000	2025	2050
2026	4622	2027	2035	2020	2101
2029	2970	2030	10451	2031	2000
2032	2946	2032	6522	2034	2940
2035	2055	2030	2991	2037	7924
2030	9196	2039	5105	2000	2945
2041	2920	2042	2040	2043	6340
2044	2010	2045	2920	2046	2920
2007	7750	2040	2320	2049	2940
2000	2093	2051	2032	2052	2050
2053	2970	2054	2724	2005	2045
2056	2937	2057	1500	1590	1000
2059	2341	2050	2920	2001	1040
2062	1051	2003	2723	2050	2930
2065	2191	2066	2100	2007	9252
2060	1091	1069	4022	2070	7040
2071	1946	2072	1027	2073	3111

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
2074	1926	2075	2025	2076	2116
2077	2060	2070	2929	2079	2905
2000	2053	2001	2919	2002	9250
2003	1946	2004	3021	2005	9230
2006	1946	2007	2111	2000	2045
2009	1292	2090	5172	2091	9207
2092	1961	2093	1920	2090	9207
2095	4622	1950	2060	2097	2000
2090	2000	2099	2000	2100	9077
2110	11606	2020	9666	2020	2127
2000	13594	2060	4400	1970	921
5000	16045	0010	2406	0020	4447
5030	2287	5040	7660	5045	7972
5004	7977	5045	7960	5100	11253
5110	14252	5110	15410	5120	14586
5140	15020	5150	10041	5100	11042
5170	12241	5100	12002	5190	5612
5200	14592	5210	14021	5220	12019
5250	9005	5250	8593	5200	0040
5310	0300	5320	6245	5330	0191
5340	2126	5350	4521	5004	7020
5510	5257	5520	9700	5530	9052
0000	9101	5500	5001	5004	9201
5570	9272	5000	9330	9590	0092
5000	9727	5010	11004	5010	9510
5030	5075	5040	0190	5650	7072
5650	0200	5004	2011	0004	13129
5000	571	6010	6452	0020	7050
6030	1007	6100	5520	0110	0002
6170	4452	0130	0230	0140	0000
6150	4176	6150	1927	0100	10754
6205	4405	6210	2296	0220	7090
6230	0001	6240	0005	0245	0004
6250	1110	6300	1490	7004	7172
7010	11000	7010	10199	7000	7014
7000	10076	7070	10044	7000	7221
7110	11491	7110	11251	7120	11116
7100	11313	7100	12100	7100	13247
7170	10065	7100	11000	7190	7012
7320	9135	7330	12916	7300	13545
7350	13225	7300	14776	7370	11006
7300	11040	7390	15000	7400	12762

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This month sees the first birthday of *Atari User* – and to celebrate we're giving away a bumper collection of prizes worth more than £3,000 in our biggest, easiest-ever competition.

The prizes are amazing, covering the whole range of Atari products.

First prize is a complete 130XE system comprising an Atari 130XE, XC11 data recorder and joystick, courtesy of Atari, worth more than £170. And the second prize, also courtesy of Atari, is a disc drive.

It seems as if all the leading lights of the Atari world are helping us celebrate. Software Express is contributing more than £1,000 worth of assorted software and SECS a further £500 worth.

Not wishing to be outdone, US Gold has more goodies for Atari users in the form of 30 copies of its best-selling game Asylum.

And joining in the spirit, CDS has donated 10 Steve Davis Snooker games, Ariolasoft is giving away its fabulous T-shirts and badges and Silica Shop is providing software worth more than £100.

Yes, there's lots to win. And if all that weren't enough, Database Software is giving away 100 5¼in discs – that's 10 boxes – and 25 dust covers.

ST owners have not been left out either. Half the prizes from Software Express are for ST owners, and these include copies of Pascal and Ultima 2. Microdeal



has donated five copies of Lands of Havoc and five copies of Flipside.

Psygnosis has provided five copies of Strataccus together with two limited edition Roger Dean prints for each of the winners.

Kuma is giving away two copies of each of its K software: K-Spread, K-Seka, K-RAM, and the just released K-Comm.

The contest itself couldn't be easier to enter. We've taken pieces out of nine advertisements in this issue and put them in a numbered grid. All you have to do is find the page number of the original advertisement.

Now comes the bit where you use your brain. We'd like you to tell us, in not more than 25 words, what you'd like to read about in a future issue of *Atari User*.

Provided the page numbers are correct the most original, entertaining or useful suggestions will go into the hat for the great First Birthday Prize Draw. That's not too hard, is it?

We'd also like to know what type of Atari machine you use, so there's a space on the coupon for you to enter that information too.

So get to work and let us have your entry not later than May 31, 1995.

Remember there are lots of prizes. So everyone has a good chance of getting an *Atari User* first birthday present.

BASIC COMPILER

Part Three of the series by FRANK O'DWYER that helps you speed up your programs

YOU should now know how to compile any programs you write, so let's discuss Compiler Basic and what it is capable of. Rather than giving you a list of its keywords, along with explanations, I'll use Atari Basic as a starting point and explain how to translate it into Compiler Basic.

● LET

A convenient starting point is the LET statement. Like Atari Basic, this keyword is optional in Compiler Basic. There are however the following major differences between the two statements – variable names may be A to Z only, expressions may be Integer only (0 65535) and expressions are evaluated left to right without operator precedence.

Expressions are also different in the two Basics. The allowable operations are:

+ for integer addition (no overflow check)
– for integer subtraction (no underflow check)
** for integer multiply (no overflow check)*
/ for integer division (no divide by zero check)
? for integer remainder on division (no divide by zero check)
| for bitwise logical OR
& for bitwise logical AND
^ for bitwise logical Exclusive OR

If you don't understand the last three you can think of "bitwise and", and "bitwise or" as being just Atari Basic AND and OR respectively and "bitwise exclusive or" you can probably live without. As well as these operations all the relational operators – greater than, less than, equal to and so on – are available as you would expect.

One thing to be wary of is the lack of operator precedence. Take the following statement for example:

```
LET X=3+2*4
```

This means two completely different things in Atari Basic and Compiler Basic. In Atari Basic X would get the value 11 since the multiplication would be done before the addition. In Compiler Basic X would get the value 20.

This occurs since the compiler does the operations strictly in the order they appear from left to right, in much the same way as a cheap calculator would. You can't use brackets to compensate for this either, since the compiler does not accept bracketing of expressions.

Don't worry though, there is always another way to write the assignment, perhaps using an intermediate variable, so that the operators are done in the order you want. The above example may be written:

```
LET X=2*4+2
```

This expression will come out the same in both Atari Basic and Compiler Basic.

In Atari Basic you can use functions such as ASC, PEEK and so on in expressions. Although you can't use these functions in the same form in Compiler Basic, they are available to you.

Figure 1 shows a list of Atari Basic functions and their Compiler equivalents.

The compiler also has a facility to pass expressions to the assembler cartridge – but they must be constants not variables. The advantage of this facility is that the expression is evaluated by the assembler before the program is ever run, so that the expression is evaluated only once and does not slow down your program when it is running. Here is an example:

```
X=A+ [12*3+20]
```

This has the assembler work out what 12*3+20 actually equals (56) and substitutes it into the expression – so it is as if you had originally written:

```
X=A+56
```

This obviously will be quicker to work out than if you had omitted the square brackets, thus leaving the program to unnecessarily compute 12*3+20 each time this assignment

Atari basic	Compiler Basic	Purpose
PEEK(A)	A	Returns byte pointed to by A.
ASC(A)	A	Gives ATAscii code of A where A is a character
PEEK(A)+256*PEEK(A+1)	A@	Returns 16 bit word pointed to by A.
ADR(string)	string	Returns address of literal string
PRINT CHR$(A)	PRINT A	Prints character whose code is A.

In all the above, A may be an expression – so you can have the following assignments

Example	Effect
X=88@	Assigns PEEK(88)+256*PEEK(89) to X
X=88	Assigns PEEK(88) to X
X=1+ A	Assigns ASC(A)+1 to X
X= hello	Assigns ADR(hello) to X – this is a number not a string
PRINT 1+2+43	Prints the character whose code is 46. Same as PRINT CHR$ (1+2+43) in Atari Basic

Figure I

is encountered.

Well, that's just about it for expressions and the LET statement.

Here are some other statements supported by the compiler.

● PRINT

PRINT is a simplified version of Atari Basic's PRINT command. As you have already seen, PRINTing an expression causes a character to be output, and not the value of the expression as you would expect. In fact there is no way to PRINT a number in Compiler Basic, except by writing a special subroutine which I will give you in a later article.

You can, however, PRINT a string. PRINT hello causes the expected output on the screen – except that the cursor does not move to a new line unless you issue a PRINT command on its own. In other words, PRINT hello in Compiler Basic is the same as Atari basic's PRINT hello;

● GOTO, GOSUB, RETURN

These work the same way in the compiler as in Atari Basic. You cannot GOTO an expression however, nor can you GOSUB an expression. You can however use labels, as in

```
1000 LABEL LOOP ONE
1010 .....
1030 GOTO LOOP ONE
```

You can POP a return address in Compiler Basic – I don't recommend it though, since if you do it wrongly you can crash the computer, and will probably have to switch off and on, losing your program and data.

If you miss the facility to GOTO an expression, you can use the GOVIA keyword. This accepts an expression, but consider the command GOVIA 1000+10. It does not GOTO line 1010, but causes the machine language to jump to decimal address 1010. You can use this to implement a sort of USR call or an ON ... GOTO command. More about that in a later article.

● IF . . . THEN

IF ... THEN is also available in Compiler Basic. Unlike Atari Basic you must finish with the ENDIF keyword. This allows the statements after the THEN to span several lines. For example:

```
1000 IF X=5 THEN G=1: D=D/4
1010 F=0: S=S+SB
1020 ENDIF
```

In this example the four statements after the THEN keyword will be executed if X is equal to 5, otherwise the program skips to the statement after the ENDIF. Note that you must always finish IF statements with ENDIF, even if only one statement is to follow the THEN keyword.

I guarantee that most of your errors will be to do with omissions of ENDIFs. The compiler warns you if this occurs, so you should pick up the habit of using ENDIF quite quickly.

Figure II shows some examples of ENDIFs being left out and the correct way to write these statements is shown in Figure III.

● POSITION, SOUND, SETCOLOUR

These are all available in the compiler. However, there is no check to see if the arguments are in range – so for example SOUND 100,50,10,8 would pass unnoticed by the compiler but might cause your program to crash – but you can use IF statements to check that the arguments are in range before executing the statements.

Don't worry about your program

```
1000 IF X=5 THEN GOTO 2000
1000 IF X=5 THEN IF G=2 THEN GOTO 3000 ENDIF
```

Figure II

```
1000 IF X=5 THEN GOTO 2000 ENDIF
1000 IF X=5 THEN IF G=2 THEN GOTO 3000 ENDIF ENDIF
```

Figure III

running slowly if you do this – remember it is going to be compiled. Here is an example of using IF statements to trap out bad arguments:

```
1000 IF C>3 THEN GOTO
     ERROR ENDIF
1010 SOUND C,50,10,8
```

Here ERROR is some point in your program which you have labelled using the LABEL keyword (see the GOTO and GOSUB statements).

● DATA, READ, RESTORE

A crude DATA mechanism is provided in Compiler Basic. Each element in a data statement must be a number betwsen 0 and 255, or an assembler expression. Here are some examples:

```
DATA 1,2,3,4,5,12+3
DATA "hello",155,0
DATA 'e,'z,23,45,87
```

In the case of a string ("hello" above) a data element is produced for each character in the string, so READing will first produce the ATAscii code for h, then for e, l, l, o in the case of our example.

Preceding a character with a single quote, as in 'e,'z causes the ATAscii code of that character to be READ from the data stream. Numbers and expressions (12+3, and so on) simply cause the appropriate value to be placed in the data stream.

RESTORE may be used to address a label or a line number. This line number or label must point directly to a DATA statement – the compiler will not scan for the first DATA statement in sequence as Atari Basic would.

DATA statements must be consecutive if READing is to work correctly, and DATA statements should be placed out of the path of the executing program, for example at the end of the program or between subroutines or procedures or else the program will crash.

You can use REM statements in Compiler Basic programs. For example:

```
1000 REM INITIALISE X=1:Y=1
```

● FOR . . . NEXT

These statements are available albeit in a slightly corrupted form. In the FOR statement there is no initialisation part so you write FOR X TO 200 rather than FOR X=1 TO 200. This means – FOR X counting in increments of one from its current value TO 200. In Atari Basic you would write FOR X=X TO 200.

If you want a loop which counts from 3 up to 1000 in Atari Basic you might write:

```
FOR N=3 TO 1000:NEXT N
```

To do this in Compiler Basic you would have to write:

```
N=3:FOR N TO 1000:NEXT N
```

It's a little strange, I'll grant you – but it simplifies the writing of the compiler.

There are no checks to see if your FOR . . . NEXT loops are properly nested, so be careful of statements like:

```
1000 FOR X TO 100
1010 Y=1:FOR Y TO 80
1020 NEXT X
1030 NEXT Y
```

which will not give an error message despite being incorrect. If you use proper indentation you should have no problem avoiding this situation.

● OPEN, CLOSE, GET, PUT, XIO

These are all the same in both Basics except XIO. Take XIO 17,#6,0,0,"S:" for example, which is the XIO command to draw a line in Atari Basic. In Compiler Basic you would have to change the two zeros to be the same numbers that you used when OPENing channel 6. Suppose you used OPEN #6,12,3,"S:" for example, then you should XIO 17,#6,12,3,"S:" as well.

The commands, as well as allowing the use of cassette, disc and keyboard devices from Compiler Basic also allow you to use colour graphics in your programs. You can replace Atari Basic's GRAPHICS, PLOT and DRAWTO commands using OPEN, CLOSE and PUT. LOCATE can be simulated using GET. All you have to do is OPEN channel 6 to the "S:" device. For example OPEN #6,12,3,"S:" gives you Graphics 3 without a text window. Unfortunately space does not permit a full discussion of the possibilities of OPEN and XIO, but I may return to this subject later.

In Atari Basic you can TRAP errors. Similarly, in compiler Basic you can TRAP errors which arise when using OPEN, CLOSE, PUT, GET and XIO. For example, TRAP 2000 will cause control to transfer to line 2000 in your compiler program in the event of any error, say while GETting characters from cassette. To turn off the Trap use TRAP OFF. To turn it back on use TRAP ON.

To examine the cause of the error you can use variable S. This is updated after every OPEN, CLOSE, GET, PUT and XIO command. In the event of an error S will contain the error code.

So if S equals 141, ERROR 141 has occurred (Error 141 being cursor out of range – see the Basic manual for a full list of error codes) – by the way, S is short for status variable.

As in Atari Basic you can POKE a byte to any address in memory. Compiler Basic also provides DOKE short for double POKE. This POKEs a 16 bit number (0-65535) to an address in memory in low byte/high byte format.

To load the screen memory address register at location 88 for example you might use DOKE 88,w – where W is the number to be DOKEd. To do the same thing in Atari Basic you have to resort to something like POKE 89,INT(W/256): POKE 88,W-256*PEEK(88).

If you examine the games listings in magazines and books you will see that constructs similar to this occur frequently. For this reason DOKE is an extremely neat and useful command.

● *That's the end of the statements Compiler Basic and Atari Basic have in common. Next month I will discuss the keywords that are peculiar to Compiler Basic – these include keywords to handle timed interrupts and local variables, so stay tuned.*

MicroLink
In association with
TELECOM GOLD
NEWSLETTER
No. 9 May 1984

MicroLink slashes the cost of Telemessages

OLD-fashioned telegrams have been projected into the Electronics Age – in the form of Telemessages. The difference is that today you compose the message on your micro, transmit it over a phone line via MicroLink, and it is delivered by the postman the following morning, neatly presented in a distinctive, eye catching yellow envelope that just demands attention!

The Telemessage service was originally introduced so that people could phone their message to the operator. You can still do this, but it costs £4 for up to 50 words.

Now, using your computer and MicroLink, it only costs £1.45 for up to 350 words! Which is sufficient for an average business letter – and a small price to pay if it means you beat the opposition to clinch that all important contract.

What's more, for an extra 65p your message can be delivered inside an attractive greetings card.

So if you've almost forgotten your loved one's birthday, or it's too late to buy a card – or you've simply missed the last post – Telemessages can be a real godsend.

To ensure delivery by first post the following morning you have to send your message before 8pm. It is instantly transmitted, exactly in the form you keyed it in, via the MicroLink mainframe in London direct to the postal delivery office nearest the recipient's address.

There it is printed out, put into the special envelope, and passed on to the local postman for delivery.

It's as simple as that!

Until now you could only send electronic mail if your recipient also had a computer. Now you can send a Telemessage to any address in the UK – all 22 million of them. (And there is also a next-day service for any of the 50 million homes in the USA.)

What it costs to send a Telemessage:

	By phone	*By MicroLink*
Up to 50 words	£4.00	£1.45
Up to 100 words	£6.25	
Up to 150 words	£8.50	
Up to 200 words	£10.75	
Up to 250 words	£13.00	
Up to 300 words	£15.25	
Up to 350 words	£17.50	

YOUR chance to join MicroLink – Page 35

Takeover boosts e-mail service

BRITISH Telecom's takeover of Dialcom, the world's largest electronic mail service, has been welcomed by Derek Meakin, head of MicroLink.

"Dialcom has a head start over all the other companies engaged in electronic mail on a global scale and is in the best position to take advantage of the dramatic increase in international messaging that is now under way", he says.

"MicroLink will be able to benefit in many ways from the revitalised Dialcom that will result from BT's involvement.

"We can expect many technical developments that will considerably enhance the service we offer our subscribers".

Dialcom has been sold to BT by ITT, the US conglomerate, which has recently been divesting itself of a number of its subsidiaries.

Last year it had an income of $19 million from its 100,000 mailboxes in the USA and from the fees it charges the licencees, the largest of which is the UK's Telecom Gold, of which MicroLink forms part.

But its growing revenue still wasn't sufficient to stop Dialcom running up heavy losses.

BT is putting in its own management and expects Dialcom to be back in profit by 1985.

In addition to the USA and UK, other countries on the Dialcom network are Australia, Canada, Denmark, West Germany, Hong Kong, Ireland, Israel, Korea, Netherlands, New Zealand, Puerto Rico and Singapore.

Subscribers in all these countries can have instant communication with each other by electronic mail, in addition to other messaging services such as telex and telemessages.

Dutch delight..

DUTCH subscriber J W Bangert says MicroLink is the most painless way to communicate with friends and colleagues all over the world – and he should know because he's a dentist.

When he isn't filling or pulling teeth at his surgery in Spandbroek he can often be found at the keyboard of his micro.

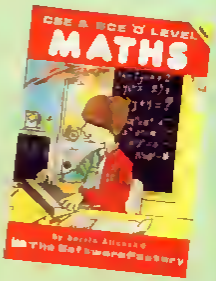
"I use the fabulous MicroLink to communicate – that's what computers are made for", he says.

"As a dentist who is interested in computers I find the system is a good way to send letters to the USA and England very quickly.

"It also makes it easier to get answers to my questions about computing – it is sometimes very difficult to get computer information in Holland, as we are not so much into these things as you are in Britain.

"I have a lot of friends in England who I often surprise with a nice card on the Telemessage service and I'm also able to send fast messages to professional magazines and organisations like the Dental Association in America".

Sterile approach to maths studies



THE Software Factory has produced a series of five discs called **CSE and OCE O Level Maths** to match the five years the children would study mathematics in a senior school

Although referred to as a course they are at best a simple aid to learning and at worst just a series of mathematics tests.

The authors say the programs are designed to assist those studying CSE and O level mathematics and that using them will increase the pupil's abilities in mathematics.

Yet the first four discs merely offer tests where they are marked and timed and the help pages offer little more than a traditional textbook would

The questions are difficult there appears to be no common thread and the pupil can get the correct answer by entering incorrect inputs

Failure results in an explanation but even this is inadequate if understanding is to arise

The language used is difficult to understand for example A number in standard form is a number expressed as a number between 1 and 10 multiplied by a power of 10

Disc 5 amounts to a test of tests It is the revision section and as a reflection of the efficiency of the course you are given three attempts to get the correct answer instead of two

Success at this level would guarantee a pass at O level as the pupil would have to be well above O level standard to understand the questions – and some of the explanations

There is a market both in school and at home for revision software but for it to be of real value it needs to be sound in its subject content and to take into account how the child learns

The traditional approach of this software might be acceptable for the grammar school where it would be backed up with teaching and an in-depth explanation

But the course is no use for pupils who wish to teach themselves. Even if the computer is used to the full it still requires a skilled teacher to enable the average and above average child to learn from this package and a skilled teacher would find little in this software to excite them

The computer has no screen graphics to speak of and little interaction and the documentation is limited

Children using the programs felt demoralised by them and showed little motivation – an unusual state considering they were using the computer

With exciting software available to help the pupil develop an investigatory approach to mathematics there is little room in school for such sterile software

Although it could provide a revision aid for a bright child who had already attained the required standard it does not provide the careful explanation that most children need

I suspect that the children who would most benefit from this set of programs will already enjoy using textbooks anyway

Alan Coode

Spying isn't easy, but

IF you're a fan of Mad magazine you will undoubtedly know about the Spy vs Spy comic strip For those of you who don't the stories follow a deadly duel between two opposing spies one dressed in black and the other in white

After the success of the first Spy vs Spy computer game the spies have now returned to continue battle in **Spy vs Spy II The Island Caper**

The game boots up with an attractive title page After a short pause a plane flies past shooting holes in the titles then another follows in to destroy more of the picture The pilots are the spies and after wrecking the screen they fly off and the display changes to the main screen

A big selling point with the Spy vs Spy games is the way in which they display the action Star Software has designed a screen with two monitors connected to a main computer via ribbon cables

The two monitors show the position of the spies – this is called simulvision They also update in real time and this is called simulplay A monitor will display a 3D view of the landscape and you can move your spy away to the distance towards you and left and right

Moving to the edge of the screen forces more landscape to scroll on and little gaps at the top and bottom of some screens allow access to the north and south of the island

The object is to recover all three parts of a top secret missile In the Mad fashion this missile is not an Exocet or a Polaris but an XJ4 1/4

It has crashlanded on Spy Island and broken up into the three parts that you must retrieve and assemble The island has only one resident an active volcano which is about to erupt so quick completion of your mission is essential

The spies have been equipped with the latest spy technology the Trapulator Modal FSS 85 This technological gadget aids you in your fight for the missile It shows what you have in your inventory and also allows you to access the equipment that you have acquired

You have a good selection of devious weapons with which to trap or attack your foe – from napalm to a coconut gasoline bomb You can also dig holes and put sharp sticks down them This has a nasty effect on any spy unlucky enough to fall into a pit

My favourite is the rope snare You select the rope from the trapulator and climb up a tree tying one end to the tree top you then stretch the other end to the ground

Once the snare is set it becomes invisible so you must remember where you set it

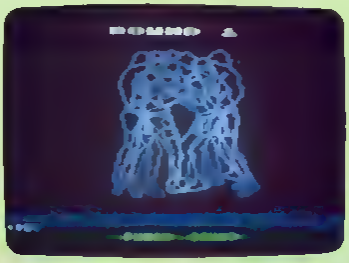
If a spy triggers off the snare he will be lifted in to the air and left dangling from the tree

All of the traps deplete your strength and delay you for a few seconds giving the other spy time to do more dirty work.

If you want spy to spy combat then you must confront your enemy When a spy enters the same area as his opponent the simulvision ends and all attention is switched to just one monitor

You are also unable to

Hit a trifle below the belt



IN Gremlin Graphics **King of the Ring** you are the manager of a boxer It s your task to guide your fighter through four fights before taking on the world champion You must use skill to select the correct training strategy and tactics to guide your boxer to victory

That s what the cassette inlay said but all I found in this game were two jerky page flipped boxers and lots of laborious typing

The game starts off with a list of 20 opponents from which you pick a contest – if the opponent you choose is considered too high grade you try again

After that you are given a screen of information on your opponent ranging from his age to his fight record You should be able to get an idea of what sort of fighter he is from this

Next you train for the fight by choosing four out of the following six routines – sparring punch bag weights gym work footwork and road work Each is supposed to develop you in a different way for example road work increases stamina and weights will improve punching power

After assessing your training you choose a strategy from another list You have four set fight strategies. Once one is picked then it s on to another list this time awarding priority points for the way you fight each round Options available are footwork infighting attack and defence The more points awarded for an option, the more effort is put into that choice

By now my fingers were developing cramp and I was wondering if I was ever going to fight But the bell sounded and I got a chance to watch my boxer s progress At this point you have the excitement of watching the other boxer bait the living daylights out of you while amassing a large punch count

This goes on until you either win or lose and then it s back to the start for a new opponent Four wins and you fight the World Champion who generally pulverises you

After playing the game for more than three hours I lost interest It seems to lack action and strategy as you only have limited set choices

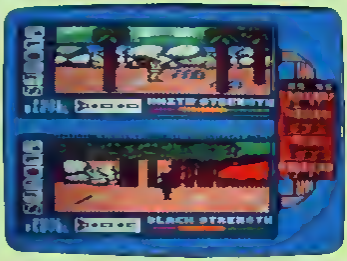
There is sparse use of sound and graphics The fighters themselves are outlines which are well drawn but badly animated

This is one of Gremlin Graphics' first releases for the Atari but it is well known for its quality games on other micros So let s call this a start and hope they work their way up

Not the best of games but it will please some people – but look before you buy otherwise you may feel you have been hit below the belt.

Paul Irvine

it certainly can be fun



access your trapulator while in combat range You have two methods of attacking an enemy spy You can either jab your opponent with a sword that appears when you enter combat mode or smash him over the head with the sword

There are also natural hazards you need to look out for The island has small areas of quicksand which when stepped in can be hard to escape from

The sea looks nice for a quick dip but if you wander into deep waters you find that spies are poor swimmers and you will soon drown

In these parts the sea is infested with hungry green-gilled mud sharks with an appetite for spies The only need for venturing out to sea is for a player who has assembled the missile to find his off-shore submarine which will take him home

The spy who achieves his goal first gets onto the submarine and a girl pops out of the hatch to give her hero a small kiss on the cheek Finally they both jump into the sub and dive deep James Bond style Altogether I found Island Caper a great game especially in the two player mode but the computer is very hard to beat

To overcome this problem I just changed the computer s IQ level

One pleasing feature was that the program could be played via the keyboard as well as joystick You also have control over which level you wish to play On two of the levels there are two islands making the game longer and much more fun

The only disappointment was one small bug which I found I somehow managed to get a screen where a tree had been split in half and all the perspective went wrong – this only happened once in many hours of game playing so it wasn t too bad

Spy vs Spy II, is a well presented and complete game It is slightly difficult for younger players to get to grips with but great value for money

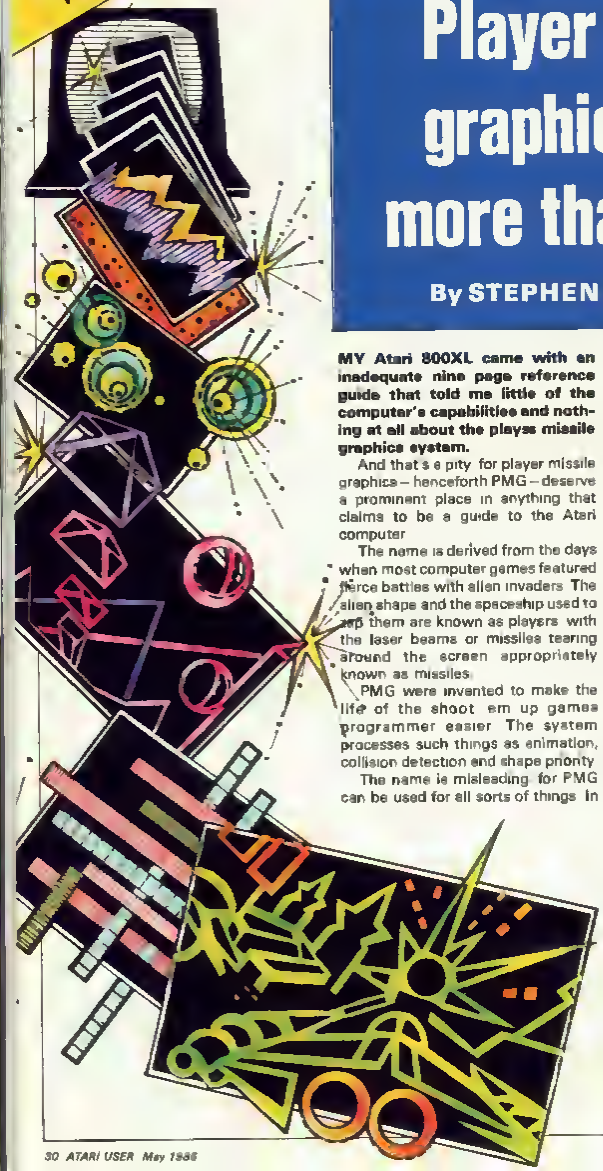
Disc price is £14 95, cassette £9 95 and you need a minimum of 48k RAM

Richard Vanner

START OF A NEW SERIES

Player missile graphics offer more than lasers

By STEPHEN WILLIAMSON



MY Atari 800XL came with an inadequate nine page reference guide that told me little of the computer's capabilities and nothing at all about the playes missile graphics system.

And that's a pity for player missile graphics – henceforth PMG – deserve a prominent place in anything that claims to be a guide to the Ateri computer.

The name is derived from the days when most computer games featured fierce battles with alien invaders. The alien shape and the spaceship used to zap them are known as players with the laser beams or missiles tearing around the screen appropriately known as missiles.

PMG were invented to make the life of the shoot 'em up games programmer easier. The system processes such things as animation, collision detection and shape priority.

The name is misleading for PMG can be used for all sorts of things. In some Atari graphic art programs the system is used to draw and move a crosshair pointer across the screen that does not erase any shape that it passes over.

It can also be used to display graphs or charts in more business orientated programs.

Other computers such as the Commodore 64 have similar graphic systems, but generally these are known by the updated and I think better name of Sprites.

Inside Atari 8 bit computers – these include the 400 800 XL and XE series – are two microchips called Antic and GTIA which are separate microprocessors dedicated to handling screen displays.

If you followed Mike Rowe's series in last year's *Atari User* you will have seen how by using display list interrupt techniques Antic and GTIA can be accessed to produce spectacular multicoloured effects. These chips also process the player missile system.

The Antic chip receives data from a program which is processed using Antic's own built-in programs and then the relevant information is passed on to the GTIA chip which takes care of putting the display on to the TV screen.

Unfortunately Atari has not seen fit to support player missile graphics with any Basic commands. There are some extended Basic programs that add extra commands which can be used to control the system, for example Basic XL reviewed in the December 1985 issue of *Atari User*.

Without the advantage of extended Basic you must resign

yourself to lots of POKE statements if you wish to use player missiles in Basic programs

This can be complex but the effort required to understand the system is well worth it. Incorporating PMG can add a touch of class to a Basic program

This month's program demonstrates some aspects of the system and illustrates how some of the jargon associated with PMG is employed

The first part shows the screen area on which text and graphics can be displayed. This screen display area is called Playfield 0. The border around the display area is known as the background

Anything appearing on the top of Playfield 0 that is not a player or a missile is Playfield 1, Playfield 2 or Playfield 3. These playfields are created by plotting points using the PLOT or DRAW commands or by directly POKEing into the screen memory area

When you use COLOR 1 and DRAW or PLOT on to a graphics screen you are plotting Playfield 1 with Playfields 2 and 3 plotted by using COLOR 2 and COLOR 3

PMG supports up to four playfields (0 to 3). Computers insist on counting from 0 unlike humans who prefer to start at 1, so Playfield 1 is actually the second playfield – confusing isn't it?

In the demonstration we are using Graphics Mode 5, a four colour mode which consists of a 40 row by 80 column graphics display area on which pixels may be plotted, and a four line text window at the bottom of the screen on which the text appears

For the purposes of PMG the text window is also part of Playfield 0. It follows from this that the text that appears on this window is also a Playfield – Playfield 2 in this program

Lines 180 and 190 draw a line around the edge of Playfield 0 to outline the dimensions of the Playfield 0. This line is drawn in COLOR 3 and is therefore Playfield 3

In lines 220 and 230 a rectangle is drawn on Playfield 0 in COLOR 2 to become Playfield 2 with Playfield 1 drawn inside the rectangle in COLOR 1

The next part of the program shows what is meant by a player stripe. If you look closely at any of the standard Atari characters that appear in the text window when you run this program, you will see that they are made up of a series of small dots known as pixels (short for picture elements). This is more noticeable on large screen televisions than small portables

Each character is designed on an 8 x 8 grid which means that a character can be a maximum of 8 pixels wide and 8 pixels high

A player is a shape made up of pixels in a similar manner – but instead of using an 8 x 8 grid, the player missile system uses either a 8 x 256 grid or an 8 x 128 grid

The 8 x 256 grid is used for single resolution players, the other for double resolution players which take up less memory space but are much chunkier looking and made up of larger pixels than the single resolution players

The demonstration program lights up all the pixels within a player stripe area to form a ribbon of colour that stretches from the top of the screen to the bottom

While all playfields must be plotted within the Playfield 0 area, shapes plotted within the player stripe can leave the playfield area and travel over the border at the top and bottom

By altering the horizontal position of the player stripe, players can also reach the border area at the left and right hand edges of the screen

In most applications only a few pixels within the player stripe are switched on and the next part of the program shows the shape of a bug when selected pixels are plotted. This shape is known as a player which is plotted within the area of the player



stripe. The player shown by the program is a single resolution player.

A missile is similar to a player but uses a much narrower stripe of 2 x 256 single resolution pixels or 2 x 128 double resolution pixels.

PMG can control up to four missiles and four players numbered like the playfields from 0 to 3. It is also possible to place all four missile stripes together to form a fifth player.

To make it appear as if the player is moving horizontally is fairly simple – you just adjust a register that stores the horizontal coordinate of the stripe. To move vertically is more difficult and is not illustrated by this program, but it will be looked at in a later article.

The program moves the player from left to right. The animation is so smooth because the player is moving a very short distance at a time – equal to the width of one pixel.

When the player touches Playfield 2 – the rectangle – a sound effect is switched on. This is done through a process called collision detection.

We can find out from Antic when a player or missile has touched another player, missile or playfield. This program checks to see if the player has collided with a playfield then jumps to a sound effect routine. As the player leaves Playfield 2 the sound effect is switched off.

When moving from left to right the player appears to travel over the playfields, but when travelling from right to left it passes under the playfields.

The portion of the player beneath the bars cannot be seen, but the section of the player between them is visible – this is an example of shape priority and enables us to decide which players or playfields are on top and which underneath.

At this point I will not go into how the program works but it is there to show you something of the player missile system's capabilities. If you examine the program you will get a flavour of what is required to operate PMG.

● *In future articles I will analyse how to initialise the system, the designing of players, animation, collision detection, changing the size of players and shape priority, as well as other matters involved in player missile graphics.*

All these elements will eventually be combined in a game starring the bug that has made its first appearance in this month's program.

```
10 REM PLAYER MISSILE GRAPHICS
20 REM by Stephen Williamson
30 REM FOR ATARI USER
40 REM PART ONE PROGRAM 1
50 GRAPHICS 0
60 SETCOLOR 0,2,4:SETCOLOR 1,5,14
70 SETCOLOR 3,1,0:POKE 712,14
80 POKE 764,255:REY=0:A=USR(ADR(A$),0,0,0):GO
L=0
90 POKE 559,62:POKE 623,8
100 POKE 53248,194:POKE 53278,0
110 POKE 704,204:POKE 53258,2
120 PMB=PEEK(106)-16
130 PMBASE=PMB*256+1024
140 FOR I=6 TO 129:POKE PMBASE+I,0:NEX
T I
150 POKE 54279,PMB:POKE 87,0:? CHR$(12
5)
160 ? "    ATARI USER'S PLAYER-MISSILE GRAP
HICS"
170 ? "                 DEMONSTRATION
      ":GOSUB 470
180 COLOR 3:PLOT 0,0:DRAWTO 79,0
190 DRAWTO 79,39:PLOT 0,39:DRAWTO 0,0
200 ? CHR$(125);"The display area of t
he screen is called PLAYFIELD 0":GOSUB
470
240 ? CHR$(125);"Anything drawn on PL
AYFIELD 0 which    is not a PLAYER or
MISSILE is a PLAYFIELD 1 or 2"
250 COLOR 2:PLOT 12,18:DRAWTO 67,18:DO
NOTHING=USR(ADR(A$),12,20:DONOTHING=USR
(ADR(A$),12,20
260 COLOR 1:FOR V=10 TO 20 STEP 2:PLOT
 16,V:DRAWTO 84,V:DONOTHING=USR(ADR(A$)
,V
265 GOSUB 470
270 ? CHR$(125);"This is a PLAYER stri
pe"
280 POKE 53277,3
290 FOR H=0 TO 200:POKE PMBASE+H,255:0
EXT H
300 ? "with all the pixels switched on
"
310 GOSUB 470
320 ? CHR$(125)
330 POSITION 2,4:? "Switching on selec
ted pixels"
340 FOR H=0 TO 255:POKE PMBASE+H,0:NEX
T H
350 ? "creates a PLAYER shape "
360 FOR H=0 TO 120:POKE PMBASE+H+120,0:
NEXT H
370 GOSUB 470
380 ? CHR$(125);"The PLAYERS can be mov
ed "
390 ? "over the PLAYFIELD,"
400 FOR H=130 TO 50 STEP -1:POKE 53248
,H
410 GOSUB 510
420 NEXT H
430 ? "or under the PLAYFIELD "
440 FOR H=50 TO 254:POKE 53248,H
450 GOSUB 510
460 NEXT H
470 ? CHR$(125);"To run demonstration
 again ";:GOTO 471:END
470 POKE 708,2:? "                 ":
? "                ":REM 16 SPACES
480 POKE 764,255
490 SAY=PEEK(764)
496 IF SAY=255 THEN 490
510 RFS=A:IF RFS=1 THEN 764,250:POKE 759,0
900 RETURN
530 POKE 53279,0
545 IF PEEK(53252)=0 THEN POKE 704,14
900 IF PEEK(53252)=0 THEN POKE 704,14
560 SOUND 0,0,10,204
570 RETURN
580 DATA 40,148,214,254,190,234,250,10
8,170,90,10
```



Tired of typing?

Take advantage of our finger-saving offer on Page 48



LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	14508	20	15045	30	11706
40	24151	50	7844	60	5504
70	4700	80	7908	90	5518
100	4758	110	6347	120	3770
130	3648	140	7123	150	6415
160	19320	170	24703	180	8342
190	9180	200	17141	210	21615
220	13068	230	11453	240	1514
250	7748	260	2118	270	7605
280	5935	290	1514	300	1737
310	11487	320	7179	330	6435
340	8817	350	1514	360	7810
370	4507	380	8150	390	17861
400	1375	410	1040	420	8221
430	4512	440	17161	450	11170
460	13903	470	18717	480	2111
490	1498	500	2554	510	5359
520	1430	530	2182	540	4840
550	8138	560	3191	570	1430
580	7810				



The adventurer's world is really looking up now

By Brillig

I SPENT some time at the Atari Show in the Champagne Suite at the Novotel, Hammersmith. Apart from the fact that the show was an absolute smash hit from everybody's point of view, there were some exciting developments in the world of adventure.

The show was the first opportunity for everyone to see what sort of support the ST was going to get So far Talent was the only software house fresh to the scene although the Infocom range was there almost as soon as the ST

Now comes The Pawn from Rainbird Software Quite honestly this adventure features the best graphics I have even seen in an adventure on any machine They are absolutely brilliant – and this from a confirmed graphics-hater If you have an ST I urge you to rush out and see for yourself I only wish I had one.

As it is I shall have to wait for the 8 bit version which should retain the graphics but in a somewhat different form

Also at the show our old friends Level 9 (even if the friendship seems to be a little strained of late) showed the preview of The Prince of Magyck which I am sure I have spelt wrong This is the first of the games they will be releasing for the ST although the rest of their range are to follow

The version they were showing was far from complete as you could do little more than move around The notice above the game did say that the authors knew there were bugs in it so hold on all you glitch hunters

Obviously it is too soon to try to review either product but in comparison with The Pawn the Level 9 graphics came a poor second I feel that their ST graphics are the same as will appear in the 8 bit version, and hence could only be disappointing on a machine like the ST

When you consider the power of packages such as Degas for the creation of artwork on the ST 8 bit graphics are really not good enough

Glitches of the Month:

IT is hats off to Gavin Jones, winner of this month's T shirt for, wait for it, TWG Infocom bugs

In fact they are similar bugs in the parser routine but I am determined to have an Infocom Glitch, so with apologies to the typesetters here goes.

In Zork II, type in TASTE MGCKJK (don't ask me why he typed it) to receive the helpful prompt of "I don't think the gdxr sylic xwuhljoykpekkrghee smj would agree with you"

Not so much a bug as a complete Vogon dictionary, speaking of which, if you type EXAMINE ZZMGCK in HHGTG the computer says "How can you read a jujctw?" How indeed?

Gavin reveals he is the possessor of Zorktools for his ISM which also allowed him to list out the complete vocabulary of HHGTG – all 900 words plus.

Now can anyone tell me the use of the words 'wimbgu' and 'woonbe' in the game? A bonus T-shirt to be won for the best answer



The rest of the Level 9 range do not all have graphics and should convert admirably to the ST As yet there is no indication of prices

The last of the Atari Show adventurers were Bignose Software who exhibited on the SECS stand their new adventure Qa!

In the game you play the stranded member of an expedition to find the fabled mask of the Sungod Qa You have to rescue the only other survivor from the local tribesmen before they manage to sacrifice her to their god as she is the only person who can redro the supply ship for help

The game has more then a touch of the Indiana Jones about it and the clock which ticks off the minutes as you try to penetrate the jungle to rescue Kate Mellender makes the action all the more tense

A good deal of care is required at the start to survive to reach the first major obstacle a crocodile-infested river If tough logical problems with a real sense of escapism are what you seek then this is for you

Jon Dean of SECS also explained that the licensing deal his company has with Bignose allows the games to come out at budget prices The Pay-Off and Opera House are combined on cassette at £4 99 Qa! is alone at £2 99 on cassette but is combined with Opera House on disc (Atari has the disc rights to The Pay-Off) at £6 99 Amazing value

In a sense the show captured the new directions adventure software is taking with regard to price Certainly the budget games that SECS had on display were selling well and yet there is still a huge market for the Infocom and Pawn style of game These are the Rolls Royces of the adventure market and deserve their premium price

To round off Andrew Daiglish wants to know how to get past the guard dog in The Pay-Off As the dog is hungry why not give it a feed Andrew but do something to the meat first to make sure he wants a post prendial nap

Once the dog has stopped foaming at the mouth that should give you some ideas about how to stop the alarm

Happy adventuring

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What it offers the Atari user . . .

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We're only a local phone call away

The majority of MicroLink subscribers can connect to our mainframe computer in London by making a local phone call. This is possible because they use British Telecom's PSS system which has access points all over Britain. A local phone call is all you need, too, for direct access via MicroLink to all the other countries belonging to the International Dialcom system.

Telemessages – at a third off

The modern equivalent of the telegram is the telemessage. Send it before 10pm and delivery is guaranteed by first post the following day (except Sunday). The service was intended for people phoning their message to the operator, which costs £3.50 for 50 words. But you can now use it via MicroLink for only £1.25 for up to 350 words! For an extra 65p your message can be delivered in an attractive greetings card.

Go teleshopping on your micro

With MicroLink you can study the British Rail timetable – and then buy your ticket in advance. You can book theatre tickets. And even order a bouquet of flowers. It's all part of the tele shopping revolution!

Send and receive telex messages

With MicroLink you can turn your micro into a telex machine, and can send and receive telex messages of any length. You will be able to communicate directly to 96 000 telex subscribers in the UK, 1¼ million worldwide – and even with ships at sea via the telex satellite network. Business people can now send and receive telexes after office hours, from home or when travelling.

What does it all cost?

Considering all the services you have on tap MicroLink is remarkably inexpensive. You pay a once-only registration fee of £5 and then a standing charge of just £3 a month. On line costs are 3.5p a minute (between 7pm and 8am) or 11p a minute during office hours. There is an additional 2.5p a minute PSS charge if you are calling from outside the 01 London call area. Charges for telex, telemessages and storage of files are given on the next page.

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MicroLink PSS service: 2.5p per minute or part (300 baud) 3p per minute or part (1200/75 baud)
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Deferred messages sent on the night service are subject to a 10 per cent discount.

Incoming telex: 50p for each correctly addressed telex delivered to your mailbox. Obtaining a mailbox reference from the sender incurs a further charge of 50p
It is not possible to deliver a telex without a mailbox reference. If a telex is received without a mailbox reference the sender will be advised of non-delivery and asked to provide a mailbox address.
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"Match of the Day" replay for Horse Play

A NEW feature can be added to the excellent Horse Play from the March issue by entering the lines on the right

They enable moves to be replayed instantly – just like Match of the Day

An array keeps track of the X Y values. These are then used to reprint the black squares – see line 3020

After the replay there's a short pause before the program returns to the end screen. – **P R Dean, Wellington, Surrey**

```
115 DIM A(120)
205 Q=0
215 IF T=1 THEN RETURN
945 A(Q)=X:Q=Q+1:A(Q)=Y
1120 POSITION 2,11:? #6;"PRESS=M  REPLA
Y=P"
1135 IF PEEK(764)=63 THEN 3000
1175 A(Q)=X:Q=Q+1:A(Q)=Y:Q=Q+1
2115 Q=0
3000 T=1:GOSUB 220:T=0:POKE 764,0
3010 COUNT=0:FOR X=0 TO 0 STEP 2
3020 COLOR 2:FOR I=10 TO 1 STEP -1:PLO
T A(Q)+1,A(Q+1)-I:DRAWTO A(Q)+10,A(Q+1
)-I:NEXT I
3030 FOR I=1 TO 50:NEXT I
3040 GOSUB 1100:NEXT Q
3050 FOR I=1 TO 900:NEXT I:GOTO 1000
```

Luggage, Dagenham, Essex

● You've made a typing error – not in line 30 but probably somewhere in the DATA in lines 190-920

Cost of expansion

IN reply to G T of York about expanding his 600XL the RAM pack he is after cost £69.99. The cost of a new 800XL is only £40 more

How does Atari account for this? If they can cut 50 per cent off the 800XL then please do this with the RAM pack

Friendly Jack has cut the cost only on the computers that did not sell. The reason that they did not sell was that the add-ons were over priced

If Atari can price their goods more reasonably they might sell a few more computers

Atari has left all 600XL owners with a computer that costs too much to expand – **T.J Keans, Seaconsfield**

Attack that fails

HAVING recently bought an Atari 800XL, I started buying the Atari User

I thought I would have a go at typing in the Alien Attack game by S Williamson from the January Atari User

I listed it out and double checked. When I run the game I keep getting Error at line 30, which is a data loading error

Could you please let me know if there has been a printer error on this game or can you tell me why I keep getting this error? – **M. Seeking an arrow**

I RECENTLY bought an 800XL computer and was typing your Bridge game when I came across a character of which I couldn't figure out how to print.

It was in line 5000 and on 5010 ' ' ' ', the problem was I couldn't print the arrow – **Nigel Strutt, Boreham Wood, Herts**

● The left-facing arrow is achieved with ESC CTRL + . See page 51 of our December 1985 issue for a complete list of those elusive special characters

Well bugged ST basic

I BOUGHT my Atari 520ST in October 1985 and it may well be a wonderful machine. But how can I tell?

I was promised that a Pascal compiler was ready and sent off my money in October. The latest word is that I will get it this month, but I've given up hoping. It is all too disappointing

I was promised that a Basic would be sent within four days of my purchase. Atari took four weeks and it is full of appalling bugs

There is no accurate cursor control command and Gem keeps interrupting programs at fun time unless I remember to run them in Edit mode. The manual is incomplete – vital tables and portions of example program listings are missing

Atari Helpline are very charming – they accurately indicate that a lousy Basic is better than no programming language at all, but they are only just right

By the way, don't ring Helpline unless you are prepared to pay Telecom at least £5 listening to pop music through the phone – not a pleasant experience

Don't buy a book called the ST Companion by Jeremy Vine too much of it is about things that Atari won't give us, like Gem Draw and Paint and Write

Congratulations to Andrew Bennett who tells us how to use the Gem INSTALL option – I've never seen a 520ST where this worked

I long to use my machine – my business needs it and here it sits, nothing to do but look at it and play with the word processor which is vastly inferior to the Wordstar I ran on my 48k North Star Horizon eight years ago. Heck, it doesn't even tell me when I reach the end of a page

The line counter counts the lines from the top of the screen as useless a piece of information as one could hope to be given

Yours, still hoping that he hasn't been had for a total wally but hope is waning – **Martin Frey, Appledore, Kent**

Happy victim

DO I detect a note of resentment in Allan J Palmer's letter from the February edition of Atari User concerning the bargain priced 800XL units. Could it be that he has paid twice the price for his?

As a happy victim of the Atari master plan to grab a larger slice of the market I can confirm that I and at least three other new owners have units which are fitted with the Revision C ROMs so Mr Palmer you have badly misjudged Atari and all that it stands for

With regard to the comments about the staff of outlets such as Dixons, Boots or Laskys – more power to them. They provide just as good a service if not better than the so called specialist

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computer shops which in my area appear to have a minor interest in Atari and associated software – if you happen to own a Commodore or Sinclair thats different.

Apologies for sounding off but that letter particularly riled me – **A. Abercrombie, Plymouth, Devon.**

Contact needed 1

I OWN an Atari 130XE Data Recorder and 1050 Disc Drive which I have just bought and would like to correspond with Atari users anywhere in the world – **Sergio Trige, Rua General Silva Freire 151, 40 1800 Lisbon, Portugal**

American source

IN the February Atari User there was a letter asking for information about software for bridge

While researching some of my older computer magazines I found an advertisement in the October 1984 edition of Antic which offers a Bridge Pro for the Atari which should work OK on the 130XE

The Californian company concerned was Computer Management Corporation 2424 Exbourne Court Walnut Creek CA 94596 (415) 930-8075 – **A J Daniel, Werlington, Suffolk.**

Bridge in sight

A G FERMOY of Orpington wrote to you regarding Bridge for the 130XE

I own an 800XL and decided in October to buy Computer Bridge for my husband for Christmas. I eventually tracked down a supplier who imports it from the States. Unfortunately due to problems with the manufacturer it took over three months to arrive but it was well worth the wait to see the pleasure on my husband's face when he opened his belated surprise present.

The staff of the company concerned Software Express were very patient and sympathetic when I kept chasing them as Christmas drew nearer and did all in their power to get the package on time – **Mrs S O Morgan-Griffiths, Ashford, Kent.**

Flight simulator

I AM interested in flight simulation programs and have all the programs that I know of. I'm sure there are more

I am looking for an interested party to assist in designing a definitive flight simulation program

Through my knowledge of actual flying general interest in aviation and seeing the good and bad parts of the many flight programs, I feel I can offer the basis for a realistic program

Although I have no knowledge of programming the Atari 800XL or BBC B that I own I do have basic knowledge of the machine operation

I would be pleased to hear from anybody who has a flight simulation program that is not generally available, or from anyone interested in helping me get this project off the ground – **Alex J M Ford, 27 Colne Avenue, West Drayton, Middlesex.**

ATARI USER Mailbag

WE welcome letters from readers – about your experiences using the Atari micros about tips you would like to pass on to other users and about what you would like to see in future issues

The address to write to is

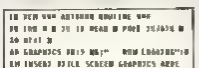
Mailbag Editor
Atari User
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY

Loading routine

IN the January Mailbag you advised a reader who wanted his Basic programs to run automatically when loaded to use SAVE C

However this uses a lot more tape than with CSAVE so your reader might be interested in the small routine below, which loads and runs CSAVEd programs

First SAVE C the routine on to tape and then CSAVE your Basic program after it To load, Rewind the tape type RUN C and off back – **P.J Rixon, Shafford**



Contact needed 2

WHY don't all you modem users give England's biggest Atari bulletin board a call?

It has eleven special interest groups, catering for most home micros and it also has a sig for Sysops only, which is for sysops of any BBS to use for exchanging information

Some of us Atari sysops are trying to organise an Atari sysops club to help each other For more details yell for me on the board

The board is on 0903 50371 I ring back 24 hours a day It is a 300 baud system – **SYSOP ROY Webbe, Worthing, Sussex**

Interface advice

I HAVE just bought a printer to go with my 800XL Having tried an Atari 1027, I decided it was too noisy and slow for me so I purchased an 850 interface and a Smith-Corona Fastext 80 dot matrix printer

I acquired them both from a shop in Warrington called All computers I must recommend them as being extremely helpful and keeping a good selection of software for the Atari

When I hooked up the printer and interface and tried out my Home File Manager I discovered it would only print out the letter X in place of a character

So borrowing an Epson MX80 from work I linked this to the interface and tried again This time it printed out the data, only it was all in italics

Searching the Epson and Smith-Corona manuals I discovered that the Home File Manager was sending out Ascii character codes in the range of 128 to 255 This was too high for my printer, and provided italics on the Epson

So I ground the MSB on the data lines by putting the wire on pin 15 on to pin 11 on the plug going into the 850 interface

I hope this information comes in handy for other Atari users who are in the same position Could we have a disc of the best of Atari User programs in the near future? – **Gary G Bates, Settle**

Ribbons available

FOR all those frustrated owners of the Atari 1029 printer who are experiencing difficulty in obtaining replace-

ment ribbons Commodore MPS 801 ribbons are a direct replacement

They are available from larger branches of Boots with computer departments, at £2 95 – A R Hussey, Reading

Library source

BEING newly initiated to micros, I have been trying to gather as much information as possible about functions and programming my 800XL.

Having just acquired my February copy of Atari User I read with interest in Mailbag that there are a few other people with similar quests

Well the point of my letter is to bring to the attention of anybody interested that certain books are available at local libraries I myself have been able to get "The Atari XL Handbook, by Lupton, Get More From Your Atari , by Ian Sinclair and Atari Basic Programs in Minutes by Stanley R Trost in Southampton main library – T D Archer, Southampton

● A good tip People often forget that local libraries will also order books for you

Out of data error

I VE just bought my Atari 800XL and finding the operators manual as useful as second hand toilet paper I went on the hunt for some books on how to use it

I found 'Basic Basic', by Donald M Monro which gave me a foundation at least

My local software shop had a few games programs as did Boots I found the assistant in Boots helpful – he pointed out your magazine so I bought the February edition

As a newcomer to home computing I must admit I found bits of it hard to understand, namely the checksum bit How do I use them?

Also I typed in the program for Make time for a time clock by Paul Ley Ran the program and all that comes up is the first two print lines followed by Error 6 at 110

I've checked all the program and found a few date errors which I corrected, but still no joy, just Error 6 at line 110 What do I do?

Please could you also give me the address of my local Atari club as this may help me get more use out of what could be a very useful computer – **David C Chapman, Milton Keynes**

● Error 6 is an out of date error so presumably you've missed something out somewhere between lines 530 and 890

The Milton Keynes Atari Users Group contact is T Jordan 18 Buckman Close Greenleys Milton Keynes Tel 0908 314439

Lost illusions

AFTER more than a few months reading around I decided that the Atari 520ST would be a very good machine for small business applications Just a little more research would, I thought, finally convince me

The local computer shops, listed by Atari in their recent advertising promotion in most of the magazines either did not have an ST and/or software

Well I thought I'll go to the horse's mouth, so I wrote to

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Atari UK – and from them received absolutely nothing

When in Peterborough recently while stood next to a 520ST a salesman said 'Forget it (the ST) went to the Commodore Amiga gets underway'

By now my enthusiasm was getting battered But I had the good luck to find a copy of Atari User and bought it Now I thought I'll really get to know something and I did

The Whittaker correspondence (February Atari User page 56) convinced me of what I should do after all my searching reading and writing

Skip the Atari and its 'Big event of 1986 Show' – **M Smelt, Gainsborough, Lincs.**

● We think you're missing out on a great machine but that's your choice

Helpful Mailbag

I WOULD like to say thank you for the excellent megazine The Mailbag section helps with minor everyday problems for example what revision your Atari has

The article concerning VAL in February's issue also contained a useful PEEK location to determine which revision A B, C you have – **A B O'Neill, Portsmouth**

Really full of heart

DISHEARTENED Well I am, but my new Atari 800XL certainly is not, it's full of heart

So much so that when in Modes 1 and 2 I POKE 756,226 which I suspect should give me a clear screen on which to print characters from the alternative graphics set. Instead I get a whole screen of heart shapes (character 0,32)

The POKE command has worked because I can overprint these with any character from the alternative set using COLOR and PLOT in the usual way

What's up? Have I got it wrong or is there a bug in there somewhere? Either way, please tell me what I should do Whatever happens I want my computer disheartened – *just a little* – **John J. Quinn, Gt. Yarmouth**

● Nothing's wrong – you just need to read Dave Russell's graphics article from our July 1985 issue He dealt with exactly this problem

Slower scrolling

ONE thing that annoys me about the Atari is that the list scrolls so fast it is virtually impossible to find for example the value of a certain variable

Therefore I have created this program in order to avoid wear on the Break key or repeated typing in of List X Y

```
10000 REM LIST SCROLL
10010 REM BY PETER LANE 1986
10020 POKE 752,1:PRINT "DO NOT CURSOR
10030 ? "STARTING LINE?" INPUT S1
10040 ? "FINISHING LINE?":INPUT F1
10050 ? "INCREMENT?" INPUT IN
10060 ? "SPEED?" INPUT SP
10070 FOR L=S1 TO F1 STEP IN
10080 LIST L,L
10090 FOR A = 0 TO SP:NEXT A
10100 PRINT "DO NOT CURSOR BACK UP
```

A recomended speed for this is about 250 but it depends how fast you can read – **Peregrine Hill, London**

American disc drives

A LETTER in the January 1986 Atari User *of particular interest to me concerned using American disc drives in Europe and the question of the power supply*

I too am interested in buying an American disc drive but am unsure of finding a transformer to handle the power difference and also 50 Hertz/60 Hertz cycle

It was heartening to read that a normal Atari transformer would do the job But in Mr Bloodworth's letter and your reply it was never mentioned if he was buying an American 1050 or an alternative such as an Indus, Astra and so on

Personally I'm interested in an Indus GT Would the Atari disc transformer work with this drive or would I have to find another transformer?

I await your reply with great interest, and hope you give a positive answer as I'm itching to order one – **P Mellin, Holland.**

● The Indus GT does not use the same power supply as the 1050 unfortunately

Considering the relative prices, your best alternative would be to purchase a normal 1050 and US Doubler chip which will provide you with just about everything that the Indus does plus a much better chance of getting service cover should anything go wrong

Composite adapter

I OWN an Atari 130XE and would like to be able to use the RGB computer display which is fitted to my Hitachi monitor/TV

Some time ago I bought a lead which fitted into the monitor socket in the computer and RGB socket in the TV

When I use this however, all I get is a blue and yellow screen accompanied by an annoying crackling A friend once told me that an RGB interface was available and that this would do the trick.

Could you please tell me if such a device is available and if so give me a price If not then could you tell me of any other way? – **Philip Benson, Rayleigh, Essex**

● Composite to RGB adapters are very expensive – far more than your computer for example You would be better trying to connect the composite monitor output into a composite monitor so there is absolutely no advantage in using RGB with an 8 bit Atari

If the connection on your TV is a Scart type or any other type which may be used with a video recorder you can connect the Atari directly to it just by using the correct cable Consult your TV dealer for more information

Assembler advice

I HAVE an 800XL and would like to learn machine code I therefore want to buy an assembler Could you recommend a good one?

Also is there a good Pascal available for the Atari? – **M Malik, Ilford, Essex**

● The best assembler on the market for the 8 bit Atari is probably OSS's MAC/65 cartridge

This is a full featured macro assembler with resident full screen editor and de-bugger It can be used for anything from simple routines to writing a full machine code game

However for starting off the Atari Assembler/Editor is a cheap but very slow alternative

Draper Pascal is available in the States but we don't know of any Pascal available in the UK for the Atari

Knocked black and blue

I AM having a little colour trouble on my 800XL On the set-up screen black and blue the blue area goes a slight greenish colour until I give the computer a little knock when it goes back to blue for a short while

It is also annoyingly noticeable on some games software Could you tell me if this would just require a minor adjustment?

I would also like to suggest that you could do some hardware reviews as I'm sure your readers would find them beneficial – **N Taft, Little Sutton, South Wirral**

● It would probably be best to take your equipment back to the dealer for a check-up



THIS program was written in response to my youngest daughter's request for something to administer her weekly spelling test

It illustrates string storage in a loop by string joining as opposed to a string array which the Atari lacks

The user is invited to enter spellings that are to be tested. The words are then displayed singly on the screen and the user is invited to enter the spelling.

If the spelling is incorrect the word is redisplayed until a correct response is given. The number of wrong responses is counted and suitable reinforcements are displayed at the end of the program. These can be altered to suit the individual child.

Although the program works as it is readers could use it as the basis for a more ambitious program. For example you might want to allow no more than three wrong responses or you might want to give different feedback depending on the nature of the error.

Adults could make use of the program as part of a foreign language learning exercise or even to improve their own spelling.

Make sure you enter the words correctly in the first instance.

Mike Rooke

MAIN VARIABLES

A$	Main string that substrings are joined onto
NM$	The substring name
X	Number array to record number of letters in substring
B$	Spelling attempt
T	Error counter

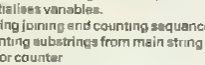
PROGRAM STRUCTURE

30	Dimensions strings and arrays
50	Initialises variables.
90	String joining and counting sequence
110	Printing substrings from main string
140	Error counter

```
10 REM ## ANNA'S SPELLING PROGRAM ##
12 REM ##      BY MIKE ROOKE      ##
20 PRINT CHR$(125)
30 DIM A$(200),NM$(20),X(50),S$(20)
40 PRINT "HOW MANY SPELLINGS DO
 YOU WISH TO      LEARN";:INPUT N
50 POKE 842,12:PRINT "PLEASE ENTER SPELLINGS " J=1
:A$="":T=0
60 FOR M=1 TO N
70 PRINT "SPELLING NO. ";M;:INPUT NM$
80 A$(J)=NM$:X(M)=LEN(A$):J=J+X(M)
90 NEXT M
100 POKE CHR$(125):M(0)=0:FOR M=0 TO
M-1
110 PRINT A$(X(M)+1,X(M+1))
115 FOR DE=1 TO 600
120 NEXT DE
```

```
130 PRINT CHR$(125)
132 PRINT "ENTER THIS SPELLING NOW ";:
INPUT S$
135 IF S$=A$(X(M)+1,X(M+1)) THEN PRINT
"CORRECT " FOR DELAY=1 TO 600:NEXT DE
LAY:POKE CHR$(125):NEXT M
145 IF C=0 THEN 180
148 IF S$<>M$(X(M)+1,X(M+1)) THEN T=T+
1:? !? "INCORRECT. THE GOOD WRS : "
160 FOR DELAY=1 TO 300
170 NEXT DELAY:GRID 110
180 IF T=0 THEN PRINT :PRINT "YOU'RE A
 WHIZZO!!     YOU GOT THEM ALL CORRECT,
 OOF CORCK AGAIN SOMOOOOME "
185 IF T=1 THEN POKE PRINT :PRINT "ONLY ONE
 WRONG     YOU'RE NEARLY A      WHIZZO.
TRY AGAIN LATER."
```

```
190 IF T=2 THEN PRINT :PRINT "ONLY TOO
 WRONG  QUITE GOOD  TRY AGAIN "
200 IF T>2 THEN PRINT :PRINT "YOU DIDN
'T LEARN THEM PROPERLY        TRY AGAI
N"
210 END
```




```
LINE CHKSUM   LINE CHKSUM   LINE CHKSUM
  10  6705     12  5361     20  2916
  30  4757     40 11111     50  5015
  60  1266     70  7073     80  5315
  90  1149    100  6704    110  1561
 115  1686    116  1508    119  2910
 120  0511    130 10300    135  1740
 140 12475    160  3452    170  4091
 180 19549    185 17209    190 11057
 200 14170    210   816
```

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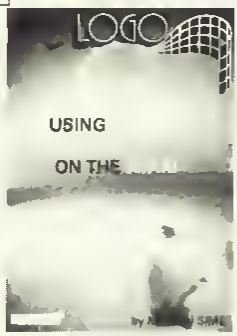
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EDWARD SHARK reports

FOR many years the availability of new software and peripherals for Atari machines has depended heavily on America as the main source of supply. Recently this has begun to change with more and more UK software houses turning to the development of software for the Atari.

Even so the majority of software released in the UK is of US origin imported by companies such as US Gold, Ariolasoft and more recently Databyte. They are all engaged in licensing programs from American software houses and releasing them on to the British market and usually at lower prices than in their country of origin.

However even when a UK company licenses a newly released US title for manufacture in Britain it can take some considerable time to see it finally arrive in local computer stores.



Since Atari first started making an impact in Britain, back in the days of Cherry Leisure – the first company to import Atari products – UK users have found difficulty in obtaining American software as soon as it was released. More recently we have seen increased activity from two major Atari distributors. Software Express and Silica Shop, who both specialise in getting new software into the UK from the States.

Looking at developments in the two markets it becomes apparent that the British are beginning to show much more independence illustrated by the arrival of new software houses on the Atari scene but British users still have to rely heavily on their cousins across the ocean to lead the way.



Many software houses have taken advantage of the 512k of RAM in the ST and developed sophisticated adventure games with both text and graphics.

Penguin Software has released Transylvania and a follow up called The Crimson Crown (Return to Transylvania), the first in a series of illustrated novels with a 1000 word vocabulary and 100 detailed graphic pictures. However these are not up to the quality of those pictures to be found in The Pawn from Magnetic Scrolls.



Sundog: Frozen Legacy will turn a few heads. Available for the colour monitor version only this is a massive science fiction adventure covering 50 cities on 18 worlds in 12 star systems. The real time 3D action with scrolling display has its roots in Elite but you can also walk into buildings and barter with the animated characters you meet there. A very impressive piece of software.

For younger people there is Walt Disney's Winnie the Pooh in The Hundred Acre Wood produced by Sierra On-Line. This sophisticated adventure for 7 year olds and upwards features all the favourites – Tigger, Eeyore, Piglet, Kanga, Roo and of course, Christopher Robin.

The package comes complete with a large map and a colourful booklet. Future releases include Mickey's Space Adventure, Goofy's Word Factory, and Donald Duck's Playground.



Activision's latest acquisition Infocom has released its latest adventure called Ballyhoo. In this you join a travelling circus and find yourself engaged in the search for the owner's daughter.

It's an adventure that really lives up to the Infocom name. It has just started arriving in Britain and is currently retailing for £34.95 and is available for both 8 and 16 bit Atari machines.

One exciting new company in the ST field based in Los Gatos just outside Sunnyvale, California is quaintly called Hippopotamus Software. Hippo as I affectionately call them have been engaged in producing software for the ST range for the last few months but I was thrilled to find out what was in two new packages they are developing. Both are aimed at the music market one for the home user and the other for the professional musician.

They are both sound sampling devices. Basically they are programs that allow you to record a sound either from a microphone or a synthesiser and play it back through your computer. But there's much more to it then this because you can edit its characteristics in many different ways.



For instance you can speed up or slow down the playback or reverse the sound wave so that it is played back in the opposite direction to the way it was recorded. Or you can take the middle of the sound wave and place it at the end or at the beginning. Put like this it might not sound that fantastic but the resultant effect is quite outstanding.

Quincy Jones, one of the world's most talented musicians and producers has already placed his order for the package.

If you would like a better idea of what some of the effects sound like just listen to groups like Go West, Sigue Sigue Sputnik and Paul Hardcastle.



In these articles I hope to bring you first news of new products appearing in the States although I will not be attempting to give you detailed reviews. This I will leave to *Atari User's* team of specialist reviewers.

Next month I will be bringing you a lot more gossip about new products and some still in development plus some exciting news from Atari in the USA.

These back issues are still available

May 1985 issue: Profile of Jack Tramiel, preview of the new machines, Attack Squash, Adventuring, Alphabet Train, Hexer utility Software reviews Sounds, the 6502 Microscope, Atari Insights – Bit Wise Beginners and Graphics.

June issue Analysis of the 130XE, Submarine, Adventuring Random numbers Software reviews Frog Jump Microscope Sounds Atari Insights – Bit Wise Beginners and Graphics special 12 page feature on Communications

July issue Disassembler Bomb Run, DOS 2.5 17 Commandments Adventuring Display List Tutorial Software reviews Power Functions Treasure Hunt Keyboard Sounds, Microscope Insights Bit Wise Beginners and Graphics.

August issue Analysis of 520ST program protection routines Fruit Gambler Assembler Touch Tablet programs first look at Logo Raster 1997 Dos 2.5 upgrade offer Display List Tutorial, Microscope Software reviews, Insights – Bit Wise Beginners and Graphics

September issue: 8-page special on the 520ST Mode 8 screen dump routine Maze Munch Data Maker Display List Tutorial, 68000 addressing modes, list processing with Logo Software reviews, Insights – Bit Wise Beginners and Graphics

October issue Computer Convey graphics program, Updates for RAM 6502 assembler 130XE Ram-disc utility Hex, Asch memory dump utility Pontoon Software reviews 68000 operating environment, Wraptrap Insights Bit Wise Beginners and Graphics.

November issue: Converse program, Bitwise operator utility ST graphics examples, ST software list, Cuq, Fawkes game Display List tutorial, Adventuring, Microscope Software reviews, Insights Bit Wise, Beginners and Graphics

December issue Check sum program Special keyboard characters, Basic XL review GemWrite and GemDraw Countdown game, Disco Display List tutorial, Software reviews, Left handed joystick, Adventuring Beginners and Graphics.

January 1986 issue: Machine code games Pt. 1 Atari in education, Sony ST monitor review Hunchy game Check sum update Listing utility Datequare game 1020 screen dump routine programming in C on the ST Adventuring, Software reviews

February issue: Machine code games Pt. 2, Dragon curves in Logo Flashing colour utility Micropainter manipulator Bridge program, Memory management techniques Interrupt driven clock, Bounce game ST problem page Adventuring, Software reviews

March issue Machine code games Pt. 3 Knight's tour program, Compiler Pt. 1 Superscript review Check-sums for early games Blook reviews Adventuring Software reviews, PLUS **Atari ST User** K Spread review Jeff Minter and Colour space, Music Pt. 1 Making the most of the ST

April issue. Sound synthesiser Compiler Pt. 2 Using modes 12 and 13 Mancuna Strategy game disc directory printing utility Adventuring, Software reviews, PLUS **Atari ST User:** Review of TDI's Modula 2 music via the Midi ports Making the most of the ST and all the latest news.

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JUNE. Feen Jump: Guide the frog to his home in this version of the arcade classic **130XE Ram Power** Use the extra 64k of memory to good effect **Submarine:** Scuttle the submarines **Etcha Sketch:** Draw pictures with a joystick. **Random Numbers.** Get random numbers from machine code **Filthy Fifteen.** Can you keep the Filthy Fifteen happy in their cells?

JULY Bomb Run. Flatten the deserted city and land safely **Disassembler** Find out what's going on deep inside your Atari **Treasure Hunt:** Use logical thinking to find the treasure. **Password Generator** Keep generating passwords till you find one you like **Keyboard** Convert your micro into an organ **Quadtomodoc** Can you sort out the mass of ropes in the belfry?

AUGUST Assembler Make machine code programming easier **Fruitt Gambler** Save money with the fruit machine simulation **Mandala.** Complex patterns made easy **Protection.** Protect your programs from prying eyes **Display List:** Demonstration programs **Raider 1997** Futuristic text adventure **Touch Tablet** Demonstration programs.

SEPTEMBER. Maze Munch: Help Horace the Blob munch the maze monsters menace. **Data Maker** Convert your machine code routines to DATA statements **Display List:** Demonstration programs. **Screen Dumps.** Dump your Mode 8 screens to a 1029 printer **Bricks.** Solve the Bricks problem

OCTOBER. Pontoon. Twist? Just **Memory Dump** Examine memory in hex and Asci **Display List.** Demonstration programs **Wrap Trap** Action game for one or two players **Computer Canvas.** Make your own micro masterpiece **Assembler Update:** Improvements for RAW assembler **Ram Disc:** Make the most of the 130XE's extra memory

NOVEMBER. Guy Fawkes: Help Guy escape from the guards **Converse.** Teach your Atari to be a psychotherapist. **Display List:** Demonstration programs **Binatae Operators:** Utility to provide logical functions **Circle.** Draw and fill a circle **Plus.** Freebie of the month **Creepshow** machine code pinball game.

DECEMBER. Countdown: Micro version of the famous TV game **Get it Right!.** Atari Users own check sum program. **Discer** Son of Ianiere on your Atari. **List Utility:** Makes listing easier **Display List:** Demonstration programs **Plus** Freebie of the month **Jane's Program** machine code entertainment.

JANUARY 1986 Bells. Help Mr Humpy rescue Esmaelda. **Get It Right!** Atari User's own checksum program **Alien Attack.** The game to accompany the machine code series. **Lister** Make listing programs easy **Dots:** Play the mean or another player at this strategy game **Dump** 1020 printer/plotter routine **Plus.** Freebie of the month **Scramble Fighter** machine code game.

FEBRUARY Micropainter Programs to manipulate Micropainter screens **Clock:** Interrupt driven clock utility **Flasher** Flashing colour utility **Bounce!.** Simple to play hard to master **Bridge:** The thinking person's card game **Plus** Freebie of the month **Demon's Lair** an adventure game you may never escape from

MARCH Horse Play Knight's tour program **Basic Compiler** Program to accompany the new series **Alien Attack** Final part of assembly listing **Plus.** Freebie of the month **Winston in the Caves** can you keep your head and help Winston find his?

APRIL. Synthesiown Activate the hidden depths of the Atari sound chip **Disc Index:** Keep track of disc files and free space with this index printing program **Graphics.** Make the most of Modes 12 and 13 **Mancuna.** Can you beat the game that learns from its mistakes?

MAY Cavern Escape: Can you help In-Go Joe escape from the labyrinths with King Munnebag's gold? **Player Missile:** Program to accompany the start of the series. **Spelling:** Automate those weekly school spelling tests

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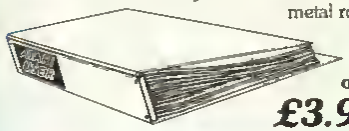
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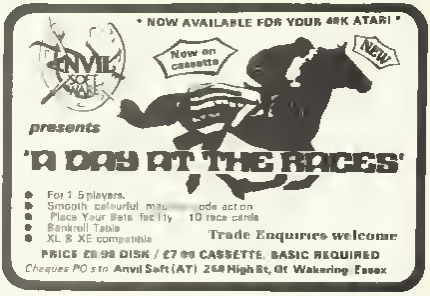
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- Under the microscope: Three disc utilities for the ST
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1040 ST was top of the Show bill

MIKE COWLEY reporting

ATARI stepped into the limelight on centre stage at its own show with all the poise of a corporate Maurice Chevalier It set out to woo its Novotel audience and this it achieved with style thanks in no small part to the two new stars in its glittering ST range

To the sound of synthesised space age music reverberating around the specially built theatre that sat Atari back more than £40 000 the brash 520STM and the all-singing, all-dancing 1040ST were unveiled

As the flashing light show ended and the simulated smoke effect which at one time threatened to engulf the invited guests dispersed it was the 1040ST which was to emerge as top of the bill Here we were told was the first personal computer on the market with one megabyte of memory at a price below £800

True enough if you don t include VAT in your costings or want the benefit of a colour monitor which brings the price of the machine up to £999 again not including VAT And for my money at least to buy a 1040ST in monochrome would be akin to purchasing a Rolls Royce with plastic seat covers

Nevertheless pound for pound whichever the model you choose the 1040ST is still the best value on the market today You can stop twisting my arm now Mr Tramiel -

Strictly though, it was not the 1040ST that was wheeled out. In fact the machine that s arrived in the UK from the States is the 1040STF And there s no prize for what the F stands for – floppy

Any way the 1040 STF is a system featuring professional integrated designs with CPU keyboard and disc drive all built in It comes with Basic and Logo and Neochrome paint program as well as a VT52 terminal emulator for comms Distinctive features include its double density 3½in disc drive and an operating system in ROM leaving the full RAM available for user applications.

Hardly had the applause died down for the Big One when its upstart younger brother the 520STM – M for modulator – was high kicking on stage Now this machine had kept everyone guessing Not about what it could do but what it was going to cost

In fact the decision about the price was not finally taken until late in the evening on the eve of the show Problems over the strength of the dollar and the weakness of the pound – *or* vice versa – necessitated an eleventh hour decision

And when it came it was something of an anti climax. Instead of the rumoured £300 price tag – some obviously slightly deranged pundit suggested less then £200 – it went on offer at £399

Now this is really a cut price unbundled version of the original 520ST package The modulator means you don t have to buy an expensive monitor in that it can be connected to a standard television set All you need for this one is a family who will forego the pleasures of watching Coronation Street while you indulge yourself in one of the three software packages included in the price

* * *

IF that was not enough excitement for the assembled press corps and assorted distinguished hangers-on who made up the almost 300 strong launch audience, someone mentioned IBM compatibility

Every time a jaded computer hack hears 'IBM compatibility ' he automatically begins to scribble on the back of a dog eared envelope saved from his gas bill The effect is a bit like shouting "knickers" during a sermon

What this turned out to be was a co-processing unit for the ST range, opening up the machines to a vast Aladdin's Cave of IBM or IBM compatible software The unit, attached via the direct memory access input, contains an Intel 8088 processor with 512k of RAM and will accept a 5¼in disc drive In ST mode it acts as a second disc drive offering the user an additional 500k of memory

However the Atari people are at great pains to point out that they are not into IBM clones rather to making the ST even more attractive to all the unfortunate people stuck with IBM PCs and inordinately expensive libraries of software

A price has yet to be fixed for the co-processing unit which will take its new at the end of the second quarter Mind you one informed source did provide me with an educated guess of £300

* * *

THE IBM act was swiftly followed by CP/M This time an emulation package for the ST which will enable the machines to run all software written under Digital Research s Z80 operating system And this one will be given away free of charge through dealers as it is in Germany

Meanwhile off stage Atari is currently negotiating with several of the major CP/M software development houses over the conversion of their programs to 3½in disc format

* * *

THE finale of the launch presentation show saw a new ST integrated communications package take its bow Again no price as yet and this time no guesses

Known as Festcom, it utilises the processing and graphics features of the ST and GEM with its multiple modes, multiple speeds, multi tasking and multiple modem support It includes full implementation of VT100/VT52 for accessing ASCII/text systems or viewdata databases such as Prestel, MicroLink and The Source

The stuff from which cults are made...



The Pawn s main title screen with 500 colours which uses up 60 per cent of the ST's processing power

ANTHONY GINN discovers the latest line in adventures

I HAVE a confession to make. I have never really liked edventures. I got bored watching matchstick men juddse across the screen in Valhalla, and text-based games always left me frustrated.

It was necessary to learn a new language to communicate with the characters, who understood as much English as my cat. So it was with little enthusiasm that I set off for Telecom House near Trafalgar Square to see the latest truly amazing state-of-the-art adventure game for the ST from Rainbird.

In the back of my mind I d always thought it should be possible to write a challenging game with graphics that do credit to the hardware and incorporating an intelligent human interface. However my own experience working with a professional programmer designing a couple of educational games for the BBC and Commodore 64 made me realise how difficult it is to produce something that is both bug-free and that doesn t insult the user s intelligence.

The frustration of trying to cram a 16th century trading game into the Commodore 64 made it clear that the ideal game would never appear on an 8 bit machine, whose owners are happy to spend hours learning the grammatical syntax and restricted vocabulary necessary to open the chest and take out the key.

At Rainbird I was introduced to Anita Straker a programmer from Magnetic Scrolls producers of The Pawn. I slumped into a chair and waited for the sales hype. Anita seemed genuinely excited. They really believed that they had developed a new generation of adventure games superior to anything currently on the market. They switched on the ST. The best picture I d ever seen on a micro appeared. It contained 500 colours and used 60 per cent of the ST s processing power to keep it on the screen. I was about to get hooked on the Pawn.

Every adventure game has a set of rules for communicating with the player. These are determined by the parser. The average parser reaches the limit of its ability with a syntax of verb noun preposition noun. If you re lucky it will understand Put knife in box.

Infocom, an American software house, developed a more sophisticated parser which can be seen in games like Zork, which allows more complex grammar like Do X with Y then do Z. Objects could also be described with adjectives – the gold dagger could be distinguished from the silver dagger, for example.

The parser in The Pawn is in another league. It is more akin to the artificial intelligence (AI) program Eliza than the Go North world of adventure games. Eliza is a conversational program written on a mainframe in the AI laboratory at the Massachusetts Institute of Technology. Professor Joseph Weizenbaum found his secretary talking to it. She quite



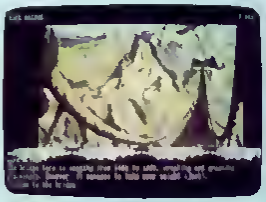
seriously asked him to leave the room as the conversation was private and intimate.

The Pawn s parser is context free. 'You can talk to anybody about anything', Anita said. 'Are you sure?' I asked. 'Why don t you try.

I was standing on the plain talking to Honest John the trader trying to get him to give me a







These screen shots show the mouse pointer and the menu bar giving access to the four pull down menus

free bottle of malt whisky. He wasn't interested. This whisky was made by the dwarves, who were banished from Kerovnia by the king for alleged involvement in the assassination of Queen Jendah. The Farthington Real Ale Company and the Romni gnomse, producers of sparkling spring water, were putting commercial interest above all else and preventing the dwarves' return.

So I can ask Honest John anything? It needn't be about the game?' Anita nodded. I thought I'd try a question that confuses politicians. I typed: 'What is the meaning of life?' Honest John replied: 'I don't follow you.'

'Well at least his answer makes sense even if he doesn't know,' said Anita. 'Why don't you ask the Guru?'

I typed: 'Ask the Guru what is the meaning of life.' The Guru replied: 'Life can be strange, wonderful, frightening, exhilarating and completely inexplicable. Life is much more exciting if spent contemplating life itself, yet death brings an end to that contemplation. Perhaps it's better not to think about it and just live it, for it is a gift and should not be wasted.'

I was hooked.

There are 35 pictures which do credit to the ST's capabilities and correspond closely to the text. They are not in as much detail as the title page, as there isn't so much memory available when the game is running. There are also 100 locations. A picture of the palace gardens revealed a shadowy brown building by the wall. I walked up to it. It was the potting shed. I entered. Inside was a plant and a pot. I typed: 'Put the plant in the pot.' The Pawn replied: 'The plant is much happier now.'

Back in the garden I typed: 'Listen to the wall.' Up came the message: "So you're a Pink Floyd fan." The sense of humour embedded in the game is the icing on the cake. It is also found in the book: 'A Tale of Kerovnia', which accompanies the game.

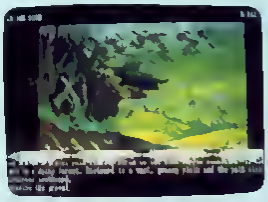
I quote: 'Centuries of selected breeding, preserving the purest of bold lines by constant and meticulous inter-marriage have resulted in the impressive figure of our present monarch who, in poor light and with a following wind, could actually be mistaken for a human.'

The parser also recognises possessions and understands complicated instructions like: 'Take the Guru's key from the hat and put in the bottle in the plant pot.'

Someone who'd been playing the game for three weeks phoned Magnetic Scrolls. They were asked what score they'd got. 'Oh, I'm not bothered about the score. I'm trying to crash the program.'

'Have you had any luck?'

'Well I'm not really sure, but I think that if you're in the hall, take your jeans off and wrap



them round your neck, then walk out, the program thinks you've left them inside!'

There are four pull down menus – Files, Text, Graphics and Colour. Text has three options, borrowed from Infocom: Normal, Brief and Verbose. These enable you to move through the text at your own speed.

The Graphics menu has three options for black and white monitors – Stipple, Freehand and Dither. These offer a choice of graphic detail. The most complex plots the shades of individual colours in a detailed grey scale. There is also a simple editing facility to alter your text.

The plot was conceived by Robert Steggles, a philosophy student. It does not always develop in the obvious direction, and if plots had tongues The Pawn's would be in its cheek. If you rescue the princess, she will follow you around for the rest of the game, asking if her hair's all right and trying to stop you from going into dark places because she's scared of them.

The Pawn comes on disc with a story book, poster, game-playing guide and ST guide. At £24.95 you get good value for your money. The program took three man years of programming time to produce – and it shows. The Pawn is the stuff from which cults are made.

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Three approaches to disc doctoring

Mike Rowe reviews a trio of disc utility programs

It may seem strange for a software company to release three disc utility programs at once, but Microdeal's Disk Help, Utilities and M-Copy are all significantly different from each other.

Disk Help is entirely menu-driven. After choosing the utility by pressing the indicated key the program gives a choice of several options to perform the relevant function. As such it is easy to use and suitable for the beginner. It is also less easy to ruin your disc.

There is an option to read the disc and show errors and bad sectors. This will show all the tracks with bad sectors on the disc or list all the individual sectors which are bad.

You can reformat old discs and rewrite the original data back to it. Like the normal format from the desktop this program can erase all data on the disc.

However it can also read the information from a disc first, reformat the disc, and write the data back out. This is supposed to refurbish old discs but I doubt that it is of any real use.

The option to repair discs where the data is corrupted reads the disc one track at a time. If the data is intact it ignores the track. If it is unable to read a track it then tries each sector in turn and if it is unable to read a byte, replaces it with the character X.

It then formats that track and writes the track back in its recovered form. If a file on the disc is not too badly damaged it may still be usable or be minimally corrupted.

Damage to a program file is more likely to be fatal, but damage to a picture or text file may be correctable after the file is made readable by repairing the disc.

Conversely, if your disc is physically damaged then the option to salvage data off corrupted or physically corrupted discs will recover as much data as possible from the disc and write it to a new, properly formatted disc. Again, unreadable bytes will be replaced by X.

The format option from the desktop does not like to find errors and if your disc is partly physically damaged there is no way you can complete a format. However the normal format option in Disk Help tries to format the whole disc and tells you which tracks will not format. You can then use the tracks up to this point to store data, for example as a backup.

You can copy discs produced on machines other than the ST or obtain data from them. The manual claims that the option to salvage data will also copy non Atari 3½in discs or even salvage data from them but I was unable to test this.

The program will work with one or two drives, both single and double sided. It is aimed at the non-technically minded but as a result is not very versatile.

All options after loading are chosen from the keyboard and prompts are given to aid your choice. All the functions I was able to test worked well and I found no bugs.

It allows you to recover from some disc problems, especially corrupted data, but due to its simplicity its powers are limited. The manual is short, but the program is largely self-explanatory.

Disk Help is priced £29.95.

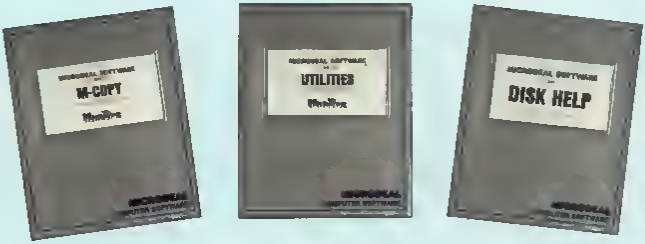
Harnessing the mouse

Utilities overlaps to some extent with Disk Help. However it is far more technical, requiring at least a working knowledge of disc architecture and layout.

The program uses the mouse to choose the options. These are simpler and allow direct manipulation of individual bytes on the disc. It is easy to ruin your entire disc in one fell swoop if you do the wrong thing.

The option to read and alter individual sectors reads in a specified sector and displays the data in Ascii form and in hex code. You can easily modify any of the bytes directly on the screen and then have the option of writing these changes back to the disc.

The sector to read is chosen by one or two



sliders controlled by the mouse I found this clumsy and due to errors on my part got some strange noises from my drive

I would have preferred to just type the sector number in from the keyboard Viewing a file is essentially the same

When viewing a sector or a file you can search through from that point for a specified string or sequence of hex numbers If the search is successful it will point to beginning of the string while displaying a view of the relevant sector Again you can alter the data as above

The volume name of a disc is chosen when it is first formatted After choosing this TOS gives no way of altering it This can now be easily changed with a few commands Similarly the file name can be easily changed as can other file parameters in the disc directory such as the read/write status whether the file is hidden or whether it is a system or a normal file Utilities can format individual tracks and check for and display bad sectors

It also allows you to copy a group of sectors into memory and rewrite it out to the same sectors or different sectors on the same or a different disc

If you accidentally delete a file and then realise you wanted it there is an option to restore all or part of deleted files If no further data has been written to the disc you should be able to recover the file intact If data has been written to the disc you may still be able to recover some data from the file but it may be incomplete

The options to recover data or repair damaged discs are similar to the options on Disc Help but less automatic needing manual operation – as a result they are more versatile

The program is mouse and keyboard operated and interfaces well with Gem except for my minor gripe above A much more serious problem was my inability to get two of the options to work properly

The option to format individual tracks refused to work at all and just folded back into the pull-down menu on execution

Even worse was the copy sector s inconsistency – if lucky it worked sometimes it just folded to the menu often it would revert back to Gem desktop and several times it completely crashed the computer with a bus error

This happened with both the old operating system on disc and the later version in ROM This was a shame because it spoilt an otherwise nice and exceptionally useful program Hopefully this has been corrected in the release version

The manual is similar to Disk Help but larger It explains the layout of an ST disc and tells you exactly how to use the options The program becomes quite usable with only a limited knowledge provided you take great care and stick to the manual

Utilities costs £39 95

Odd route to copying

M-Copy is a strange program supposedly aimed at software companies to enable them to make multiple copies of a disc

It operates by reading all the data off the disc into memory, ignoring unused sectors. It stops immediately on finding any bad sectors and so will not copy commercially protected discs

It then gives you the option of formatting only the used parts or all of the destination disc and will then produce copy after copy of the original only swapping the destination disc each time

Note that if your TOS is on disc you can only copy discs that are about half full Only if you have all 512k available can you hold a full single sided disc in memory

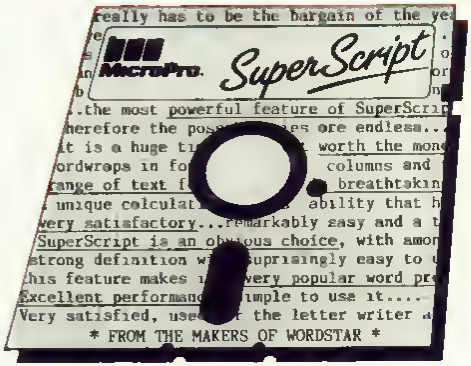
Any true software manufacturer would want a quicker way of duplicating discs than having someone tied up copying one at a time It does not allow for creation of protection, so it is not much use to them

Few individual users want to make more than one or two backups of a disc and as it will only copy those that TOS will copy perfectly well the minimal time saved would certainly not be worth the cost of the program

As I see it only someone producing software on an amateur or semi-professional scale would find this program useful

M-Copy costs £49 95

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START OF A NEW SERIES



Planning leads to classy animation

Kev Bulmer begins a new series on ST graphics by looking at the two available packages, Neo-Chrome and Degas

SO you got your ST home, invited all your friends and neighbours round, showed off the bouncing ball and perhaps the flying bird and they were all suitably astounded, and rightly so.

So what do you do now? Chances are you want to try out the machine's graphics for yourself. I certainly did. At this point you have a choice. You could mess about with Basic or Logo or, quicker and easier, pick up a graphics program.

Basic and Logo each have strengths and weaknesses of their own which we won't go into here, so that leaves us with a graphics package. At the time of writing two such programs are available. Neo-Chrome, free from Atari, and Degas from Batteries Included via Ariolasoft.

Neo-Chrome is free for the asking from your Atari dealer and as such may be more common than Degas. It is a powerful program and, once the bugs in the latest revision have been ironed out, could well become the standard format.

The strongest feature of this package and the advantage it has over Degas is the animation facility. Two forms of animation are available from Neo: colour indirection and true frame by-frame. The running waterfall demos are done purely with colour indirection, in other words the picture remains constant at all times but the colours in the 'paint pots' are cycled.

You can arrange for any number of consecutive colour registers to be cycled in either direction and you can choose the speed. If you save your masterpiece while the colours are cycling it will come to life when viewed with the slide show program that accompanies Neo.

Obviously to make good use of this function you have to plan the picture in some detail right from the start. The true animation facility is incomplete in my copy but it is with this system that the flying bird was achieved. It looks as though it will be powerful and easy to use when finished.

Neo is still under development by an Atari employee, Dave Staugas, apparently in his spare time, and Atari is handing out the latest version to user groups and dealers as extra features are added. Obviously so with any program which is still being developed, bugs are present but at least the program does run and it can be used.

The notable bugs in the latest version (number 6) concern two of the new icons. The first is the movie camera. It seems that the code behind this button has not been written so that when it is chosen a sub-menu appears but it is totally unresponsive to any attempted choice. This does not affect your work, it only wastes your time.

The other bug is more serious but can easily be avoided. Do not choose the icon which consists of a rectangle, a circle and a polygon. I suspect that when it is finished this will allow you to draw solid or outline shapes. If you select this feature at the moment an exact replica of the control panel is dumped on to your painting obliterating about half of it. So avoid this by not selecting this icon.

All the Neo drawing functions are controlled from the left of the panel which sits on the lower half of the screen. These include free hand drawing, line drawing, spray painting, erasing, moving or duplicating blocks of the screen, adding text, filling, moving the whole image and also working with the disc.

Across the top of the control panel are the 16 paint pots. An arrow points to the colour currently in use. In the right of the panel is a window called the mixer which offers full control of the palette. There is a swatch of colour here with its RGB values to its right (000 for black for example). By pointing to a number and pressing a





mouse button you can increment or decrement the value and instantly see the colour change

Pointing to the colour itself and double-clicking will transfer it to the paint pot you are using. Likewise pointing to a pot and double-clicking will bring the resident colour down into the window for you to examine. To the right of the number and to the left of the colour sample are two arrows. Clicking on these starts the colour movement - the more you click the faster the colours change.

Which colours are affected is controlled from the paint pots across the top of the panel. If you look closely at these you will see that two are shaped like arrowheads. Pointing at either and clicking the right hand mouse button allows you to drag the pointer to the pot of your choice. The colours in between the arrows will be the ones which cycle. Simple really!

Next to the colour window is a button labelled Undo. Clicking it undoes the last action. This is a lifesaver if a fill has spilt and obliterated your picture. If you have turned off the control panel, toggled with the escape key, turning it back on counts as the last action, so use the key marked undo on the keyboard itself.

Neo allows you the choice of several styles of text to print on the screen. If you look on page 68 of your Logo Sourcebook you will see them all printed out. The only drawback is limited flexibility when placing text on the screen. Once the cursor has been positioned that is where your text will appear. The Grabber allows you to scroll the picture behind the control panel so that you do not have to turn it off to see all of your screen.

The nicest feature about Neo-chrome, and I really can't praise it enough, is the window in the centre of the control panel. This area shows you all 512 colours on a grid. To choose a colour simply point to it and click - it will then appear in the mixer area ready to be moved to your palette.

The window is not large enough to allow you to see all of the colours at once but by pointing at it and holding down the right hand mouse button you can scroll it left and right with a relative of the Grabber who moves the main screen.

This in itself is a nice feature, but as your pencil (yes I do mean pencil, the arrow icon changes to a pencil when you draw) moves out of the control panel and over the picture, this window becomes a scrolling zoom window. This means that no matter where you are on screen or what drawing operation you are carrying out as long as the control panel is visible you can see an enlarged version of your picture.

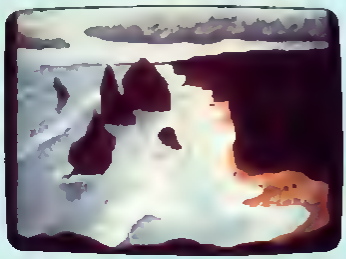
I find when drawing that I tend to look at this window and only occasionally up at the main screen to check my position relative to the rest of my work.

Degas is beautifully presented and has, in my opinion, the edge over Neo-chrome. Also on the program disc are some sample pictures, a font editor, a slide show and a conversion program to make Neo-chrome pictures into Degas pictures.

One of Degas' strongest advantages is that it can be used to draw in all of the ST's three graphics modes. This will not be so important when Atari start selling STs with modulators, but for those of us who have already bought our ST and cannot afford a colour monitor, Degas is the only way to draw (let's forget about Doodle shall we?).

The first chapter in the book recommends that you make a back-up copy of the program disc and use that in future. This is excellent advice, especially if, like me, you soon start to customise your disc with new fill patterns, brushes and fonts.

The most immediate difference between Degas and Neo is that Degas uses a full screen menu and flips to your painting when you want to







paint. This is toggled by the right hand mouse button and is the only function this button is used for.

Several drawing modes are available: freehand points, lines, K-lines and rays. The airbrush mode on Degas is worth a medal. Unlike the spray can in Neo, it acts like the real thing. The longer you hold the can in one position, the thicker the deposit of paint there, and on top of that you can set the nozzle size and the air flow.

There is a fill mode, of course, with 38 built-in fill patterns and the ability to design your own patterns and save them to disc – several are already on disc in fact.

Worth a mention while I am talking about the fill feature is that the undo key works in Degas too. A large selection of geometric shapes are available including circles, boxes and polygons, and solid or outline.

The cursor can be slowed down for precise work, areas of the screen can be moved or copied to others, a mirror can be set up in any of several planes, the working drive is easily specified from a sub-menu which includes a ram disc if one is present and you have full control over the palette of colours.

Perhaps the best feature of this utility is its text handling. A small window on the right of the control screen shows a view of the type face currently in use. You can load another font, perhaps one you created with the editor supplied, into the window and write with that. Pointing at the text window and clicking the mouse button cycles through up to six permutations of the font.

Leave the style you want to use visible, point to text on the menu and go to your painting. You can now type away and see your text on screen and by moving the mouse, scroll the legend to exactly where you want it to be. Pressing the mouse button paints the letters on the image.

Another powerful and effective feature should be mentioned. The Degas menu has a box marked shadow which on hi-rse systems is in gray and cannot be used. In colour this choice allows some simple but effective images to be created easily. As its name suggests you can set up a shadow in any of the available colours in any of eight directions away from the original and at any distance from one to 16 pixels.

This looks nice when used on lettering and is used on a sample picture on the disc in this way. What is worth noticing, though, is that shadow works with almost all of the drawing functions not just text. A shadowed airbrush used with two shades of green and a displacement of two or three pixels allows for rapid spraying of foliage. Drawing a plan view with shadow set, if used carefully, can work out most of the light and shade in your picture.

There are two small bugs in Degas which like those in Neo, are irritating but can be lived with. When saving a monochrome picture for the first time there is a tendency for the colours to be reversed. This does not happen every time and it is simple to correct.

The other flaw is with the Gem choice boxes. These appear when you have to choose a disc file to load or save to. The bug manifests itself as ghost choices. You may not have pressed your mouse button or even pointed at anything, but the computer chooses a file or blank file or cancels the menu all by itself. If this happens just try again.

It is quite easy to forgive the flaws in Neo since it is still being developed and after all is free. Degas, however, is a commercially published program and should not contain two such obvious bugs.

The two packages offer pretty much the same features although with some important differences. Neo has its animation facility, its visible colour palette and its price in its favour whereas Degas has its stronger text handling, shadowing, mirroring, polygon routines, its flexibility and a couple of useful programs on the disc.

If not for their incompatible picture files I would use them both while working on a design, to take advantage of the various good points. This is possible now that André Willay has written a Degas-to-Neo converter.

● *These are the tools available, and next month I shall describe the process of painting with them and discuss some of the techniques needed for successful computer graphics.*

Kev Bulmer





Let Neo animate your Degas drawings



André Willey offers the best of both worlds with a package to convert Degas pictures to Neo format

MOST proud owners of Atari's new 16 bit ST computers will by now have received a copy of the free drawing package Neo-Chrome, which offers a wide range of facilities, including a couple of rather nice animation routines.

However as the final version is not yet ready there are no circles boxes and so on and the text features are rather limited So when Tom Hudson s drawing package Degas, which had all of these extra options, was released many people rushed out and bought copies The disc even included a program to convert your Neo pictures into a form Degas could use so you could continue with your early masterpieces.

If you read Kev Bulmer's article you ll see that the advantages of Degas are many, but that it does not contain any colour rotation or other animation commands This prompted me to think that many people would like to be able to use their Degas drawn pictures with Neo's animation

There is perhaps understandably, no routine provided to convert your Degas pictures back into Neo format, so I decided to write one.

The first question was simple – the manual keeps referring to 1 2 or 4 plane graphics modes – Neo using the 4 plane variety – so what on earth does that mean? I started examining the files with a sector editor and after much trial and error – rather more error than trial – I had it worked out.

Most of you will have already worked out that a 16 colour screen display will need a minimum of four binary bits to define each pixel or dot on the screen

This is verified by the fact that the screen is 32k long – 320 × 200 pixels = 320 × 200 × 4 bits or 32000 bytes The first colour would be coded as 0000 the next as 0001 then 0010, and so on Just to make things easy for you though the data format bears no resemblance to this neat 4 bit pattern The data is split up into 'words' which are 16 bits wide – think of them as 2 bytes The first four 'words' must therefore contain the data for the first 16 pixels on screen

In monochrome this is much easier Each pixel is controlled by 1 bit only so the first word covers the first 16 pixels the second word the next 16, and so on In order to make the computer a job easier Atari decided to follow a similar format for the other modes and we find that the first word contains the first bit of data for the first 16 pixels

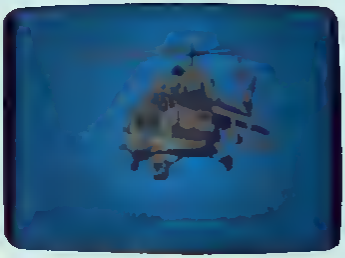
The next three words contain, respectively the next three bits of the data for that same set of 16 pixels The fifth word then starts again with the first bits of pixels 17 to 32, and so on If this all sounds a bit complicated have a look at Diagram I To find the colour of the first pixel on the screen take the first bit of each of the first four words and put them side by side This is then the binary code for the pixel s colour

The ST uses colour indirection meaning that a screen pixel of colour 1 refers to the contents of the first colour register, not that the pixel should be displayed in the first colour out of 512 Thus if you change the contents of the register via the control panel for example everything drawn in colour 1 will take on the new value

Each colour has three parts to it, the red green, and blue levels, which make up the complete 512 colour range Each of the three levels can be between 0 and 7 and these are stored within two bytes each taking up four bits

Each four bits could theoretically store any number from 0 up to 15, so perhaps a future





"wonder graphics chip may handle 16 x 16 x 16 colours giving 4 096 possibilities in all – does that remind you of anything?

Now that we have discovered the screen format and the format of the colour registers, how does all of that fit into the file format of Degas and Neo?

Well Degas has a very simple format. The first word is a flag to indicate the resolution of the file with 0 being low-res, 1 = medium res and 2 = high-res (monochrome). We are only interested in a value of 0 here, as Neo will only work in low res. The next 16 words are the 16 colour register values and the next 32000 bytes are a straight dump of the screen data. Neat eh?

Neo on the other hand has many extra bytes of data to handle the colour animation and so on. I haven't worked them all out as yet, but the ones in use so far are as follows:

Words 0-1	Unknown (0,0)
Words 2-17	Colour registers 0-15
Words 18-23	Unknown
Word 24	Low 8 bits = position of colour scroll markers
Words 25 & 26	Colour scroll settings speed/time, and so on
Words 27-63	Unknown (empty at present)
Words 64-16062	Screen data (32000 bytes)

If anyone has found out the purposes of any of the other data bytes, why not write in and let us all know.

Once the two formats are understood a

```
100   rem Simple ST BASIC program to convert DEGAS Pictures to NEO
110   rem By Andre Willey, 1986
120   clearw 2:fullw 2:gotoxy 0,1:color 2,1,1,1,1
130   ?'                    CONVERT DEGAS (LOW RES) PICTURE TO NEO FORMAT"
140   ?:?"                              By Andre Willey,  January 1986"
150   ?:?:color 1,1,1,1,1
160   gotoxy 14,6:input "Enter Source (DEGAS) Filename >",in$
170   gotoxy 14,7:input "Enter Destination (NEO) Filename >",f$
180   open "R",#1,in$,2
190   field #1,2 as inword$
200   get #1,1
210   i%=cvi(inword$)
220   if i%<>0 then ?:?"Can t convert  ";in$;". Not Lo-Res":closeend
230   gotoxy 19,9:    ?"OK. Creating new file: ";f$
240   open  R",#2,f$,128
250   field #2,128 as outword$
260   lset outword$=string$(128,chr$(0))
270   for i%=1 to 351
280   put #2,i%
290   next i%
300   close #2
310   gotoxy 10,11:?"File set up: Converting formats ...  PLEASE WAIT ..."
320   open  R",#2,f$,2
330   field #2,2 as outword$
340   for i%=2 to 17
350   get #1,i%
360   lset outword$=inword$
370   put #2,i%+1
380   next i%
390   for i%=1 to 4
400   lset outword$=mki$(&h2020)
410   put #2
420   next i%
430   lset outword$=mki$(&h2E20)
440   put #2
450   lset outword$=mki$(&h2020)
460   put #2
470   lset outword$=mki$(&h00)E)
480   put #2
490   for i%=18 to 16017
500   get #1,i%
510   lset outword$=inword$
520   put #2,i%+47
530   next i%
540   close
550   gotoxy 24,14:?"Conversion complete."
560   gotoxy 20,16:input "Another File?  (Yes or No)";reply$
570   if left$(reply$,1)="Y" or left$(reply$,1)= "y" then 120
580   if left$(reply$,1)<>"n" and left$(reply$,1)<> "N" then 360
590   clearw 2:end
```

100-150	Set up the screen
160-180	Get the filenames and open the input file
190	Tells Basic that each data item is two bytes in length
200-220	Check if the Degas file is in low-res
240-330	Set up the output file and write zeros to it
340-380	Transfer the colour values
390-480	Set up the Neo special data words
490-530	Transfer the screen data itself
540-590	Close file, check if more files to do

conversion program is very easy I have written it in ST Basic, which makes it rather slow but at least everyone will have a chance to type it in and use it I was using medium-res colour mode at the time, so you may need to change some of the print statements to fit it neatly on to your screen

The program will ask for source and destination file names, for example A FILE PI1, and B NEWFILE.NEO if you have two drives It will then transfer the data from one file to the other and ask if you have any more files to convert Type Yes or No here I have not used the INKEY$ function as it has some bugs in it on most Basic discs so you'll have to press Return afterwards The resultant file will be ready to load into Neo have fun

André Willey



Pixels on the screen	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Word 1 (first bits)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Word 2 (second bits)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Word 3 (third bits)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Word 4 (fourth bits)	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

Thus, taking the first bit of each word, and adding them up as above you will find the colour register for the first pixel and so on across the full 16 bits

Diagram i

Each of the 16 colour registers is defined as follows

	First Byte								Second Byte							
Bit	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Colour	x	x	x	x	R	R	R	R	B	G	G	G	x	B	B	B
	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	1

EG Would mean red level 1 blue level 4 green level 7 (or $0147)

Diagram ii

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The ST's future on show... at the

THE first Atari User Show in March was a great success. Jeff Minter was there demonstrating his incredible Colourspace continually the entire weekend. At various stands it was possible to see all the ST software and have a little play with it.

The new 1040ST and 520STM made their first UK appearance. As I mentioned last month the 520STM is simply a 520ST with a built-in modulator which allows you to use low-res on a TV. The 1040ST has a built in double sided disc drive, 1mbyte of RAM memory and ROMed operating system.

There was very little new software for the ST. However the software houses that first announced ST titles last September were showing completed versions of their games and business titles. Several houses are developing advanced word processors which will have built-in spell checkers and allow pasting of graphic pictures and diagrams.

Probably the most interesting place at the show, at least for 520 owners, was a small stand displaying various hardware products. AST, who have previously spent most of their time developing add-ons for the BBC computers have now turned their guns on the 520ST. At the show they were selling a memory board to expand the 520 to 1mbyte for £100 and double sided 3.5 disc drives for about £100 less than Atari's own.

Near the entrance of the show was Megamax's stand. They are probably best known to you as authors of the excellent Megaroids game, which was written as a demonstration of Megamax's C compiler. If you can't afford Atari's own developer pack (£460) you should give this a serious look. Their own ST development pack contains all you need to start serious ST development and will soon be available in this country for about £150.

Overall the show was very exciting for ST owners. We saw the ST celebrate its first birthday – it was announced in Europe last March – with an ever growing base of good quality software. We also saw the future of the ST series.

On the Saturday afternoon of the show there was a private seminar for software developers. The main item of interest to come out of this was that the spare sockets inside the 1040ST are to hold some new chips that will expand the ST's capabilities. The new chips will proably never be available for the 520 unless a third party manufacturer develops some method of giving the 520 the extra sockets.

The first of the new chips will be a hardware blitter – a blitter is designed to move large areas of memory around at great speeds without relying on the ST's 68000 processor for help.

Second will be a graphics chip which will expand the ST's resolution and give 4096 colours. Both chips will be available by the end of the year and shouldn't cost much more than £125 each. Their addition will mean that there will be five different versions of the ST – 520STM, 1040ST, 1040ST with blitter, 1040ST with new graphics chip and 1040ST with both new chips.

Atari sees the 520STM as the base machine which will soon be available from your favourite High Street retailers. For serious business uses there will be the 1040ST.

Atari feels that the new chips will be added if and when necessary. For example a user who wants to use his spreadsheet at the fastest possible speed will add the blitter and the 1040 owner who wants to do video design will add a blitter and the new graphics chip.

Atari is probably right in this approach – why pay for extra chips that you'll never use? I fear, however, that dealers will all too easily be able to sell the new chips to people who don't really need them. We'll just have to wait 10 months to find out.

Send your Atari ST queries to: ANDREW BENNETT, Atari ST User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY

Problems, problems

MR J. Partner and several others have written in to complain about STWriter's inability to display the vertical type of apostrophe that appears in the STWriter manual. This is a bug in the ST operating system which has been sorted out in the ROM versions. If you upgrade to ROM your problems should be solved.

Mr H. Symonds from Harrogate has written detailing a problem he has been having with his system discs. Sometimes when he attempts to boot up his ST it requests the system disc, even



though he has it in the drive I have been having a similar problem with my own ST

It is caused by a badly seated chip inside the ST The chip in question is either U1 or U9 If you push these chips firmly into their sockets peace should be restored If you don t feel confident enough to open up your ST your dealer should be able to help

Paul Wooding has difficulty printing out Basic listings his printer insisting on placing a blank line between every line of listing This can usually be solved by changing the setting of one of the DIP switches inside the printer (see the printer manual for more details) The ST already sends a carriage return after each line and therefore you should turn off the carriage return inside the printer

A few of you have had problems with the listings I've given over the last couple of months You should take careful note of the spelling of the various variables For example one variable is called CONTRL rather than CONTROL If you use CONTROL by mistake the ST will crash and display several small pictures across the middle of the screen These will either be little atomic bombs (system on disc) or small spy bomb symbols (system in ROM)

★ ★ ★

Many of you may have watched Micro Live on March 14 At the beginning of the programme Fred Harris and Lesley Judd spent approximately four minutes discussing the Atari Show and the 1040 and 520STM As far as I can remember this is the first time in its history that Micro Live has mentioned Atari or shown its products in any but a background role

The report was full of snide comments For example Atari were accused of doctoring their comparison between the Commodore Amiga and the ST Hardly any software was shown and Atari s peripheral to give the ST IBM compatibility was reported as not being able to run well known IBM software This despite the fact that I saw various IBM packages running quite happily on the ST

Most of the four minutes was spent discussing Rainbird s Pawn adventure game and no other ST software was demonstrated Micro Live didn t even feel that the show warranted a video camera

Come on BBC! In Micro Live you have the opportunity to supply a magazine format programme showing new software for all machines, interviews, and hardware reviews Micro Live has become little more than an advert for the BBC Micro and spends most of its time discussing computers in education

As evidence consider the period when Acorn was having financial problems While the computer press were reporting Acorn's problems without bias, Micro Live spent several minutes defending Acorn and accusing the press for somehow bringing Acorn down Write to me giving your feelings on this matter

HINTS

- *Take good care of your ST's mouse. If you should lose it, a replacement from Atari will cost you a staggering £52*
- *Rush along to your dealer for a new upgraded version of 1st Word This new version – 1 06 – has most of the features that you have lacked (judging from your letters) To obtain your copy you'll have to take along your original 1st Word disc and your dealer will copy the new version on to it. Make sure that you haven t any document files on the disc!*

Q A

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